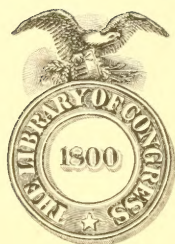


THE GARDENETTE
OR
CITY BACKYARD GARDENING
BY THE SANDWICH SYSTEM

BENJAMIN F. ALBAUGH



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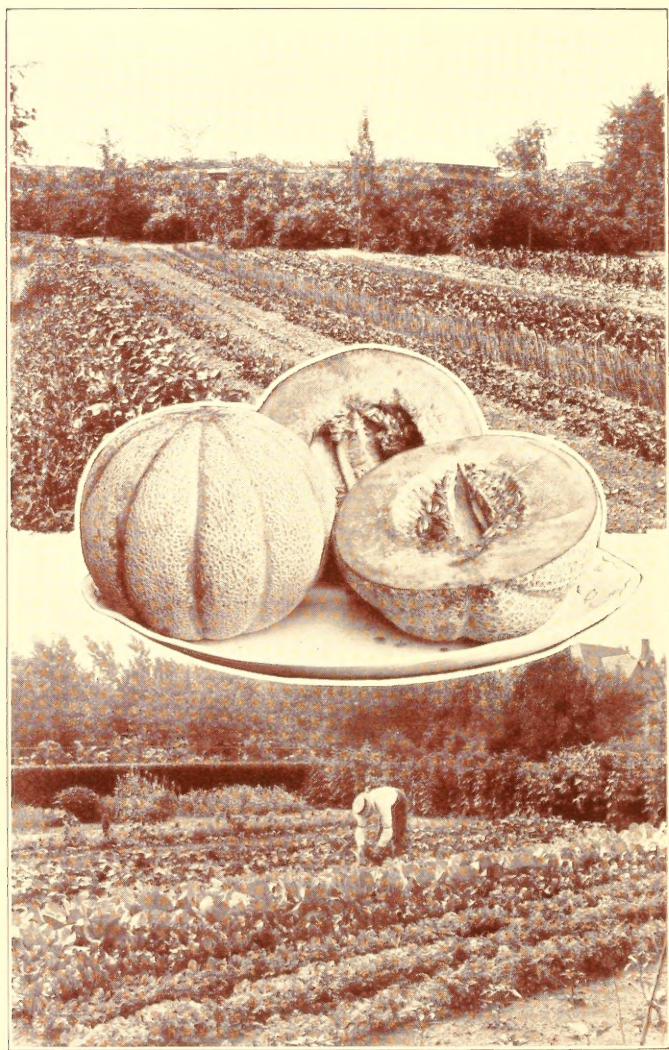
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THE GARDENETTE

OR CITY BACK YARD GARDENING

The Sandwich System

BY

BENJAMIN F. ALBAUGH

PART 1. VEGETABLE GARDENING

PART 2. FLOWER GARDENING



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The Publishers desire to acknowledge the courtesy of Nathan R. Graves, Rochester, N. Y., for the privilege of reproducing his splendid photographs on the cover jacket of this volume. Also, the valuable assistance of The Threlkeld-Walter Engraving Company, Cincinnati, who so ably executed the work.

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DEDICATION

To her, who, walking by my side, has shared my joys and griefs, and whose helpful labors and sympathy have been a constant inspiration, this volume is affectionately dedicated.

THE AUTHOR

PREFACE TO THIRD EDITION

The favor with which *The Gardenette* has been received has exhausted the first and second editions.

It has been thought best to enlarge and improve this edition in accordance with the wishes and advice of many readers.

Therefore, much of that part of the book which relates to vegetable growing has been rewritten, some new and very successful methods have been added, together with some useful tables of reference. This part of the volume is styled "*The Vegetable Garden.*"

As there is an urgent and increasing demand that the culture of flowering plants should receive more attention, we have prepared a complete department which is called "*The Flower Garden.*"

New illustrations have been added, and the presswork and binding have been greatly improved.

The author desires to express his gratitude for the many kind and appreciative words from readers.

To the author, the work has been a labor of love, and he will feel well repaid for his efforts, if this humble volume is found helpful in the laudable work of "making desert places to blossom like the rose," for few things in life are more

8 PREFACE TO THIRD EDITION

conducive to health and real happiness than a successful garden, which is the direct result of our own labor and planning.

THE AUTHOR.

COVINGTON, OHIO,
JANUARY, 1915.

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PART I
VEGETABLE GARDENING

THE GARDENETTE

OR THE CITY BACK YARD GARDEN

THIS little volume is not designed as a guide to those who have large areas to cultivate, nor is it intended for the use of professional market gardeners, but it is arranged to meet the needs of the beginner, or amateur, and especially for those who have limited areas that are available for this purpose.

Few persons realize the possibilities of the small piece of ground represented by the back-yard of the ordinary city lot—that part which is not occupied by buildings. Too often this part of the yard is made the depository of garbage and useless trash of all kinds.

Such accumulations are unsightly and unsanitary. The Sandwich System herein described is not an idle theory but a successful, solid fact, the result of six years of careful, painstaking experiments, and highly successful efforts in practical vegetable growing.

This peculiar method was first suggested by noticing the marvelous growth of weeds, etc., about the base of an old, decaying strawheap, where some stable manure had been dumped on a thin layer of straw. On this more straw was scratched down by poultry. Lastly on top a few

wagon loads of street-serapings, containing weed seeds, were dumped. The growth of these weeds was something wonderful. With this hint for a beginning, the marvelously successful Sandwich Bed was developed.

The surpassing vigor of growth, the earliness, large size, and superior quality of the products grown by this method, make gardening a very fascinating employment, for it cannot be denied that the ability to greatly surpass "The Other Fellow" gives especial gratification to those engaged in this line of work.

Where the space is limited, only a few articles should be attempted. It does not require a large area to grow a few fine tomatoes, muskmelons, cauliflower or egg plant. Or a bed of lettuce, spinach or green onions.

If only one square rod is available, it will pay to have a "gardenette."

SPACE REQUIRED

Three square rods or a space of ground, say eighteen by forty-five feet, can be made to produce a large part of all the vegetables needed to supply the table of a family of five or six persons, throughout the season.

The author has repeatedly produced on such a plot, but containing four square rods, about the following:

30 Dozen Green Onions	25 Choice Egg Plant Fruits
1 Bushel Dry Onions	25 Extra Fine Squashes
10 Messes Green Peas	50 Messes Lettuce
15 Dozen Beets	20 Messes Endive
22 Dozen Radishes	10 Messes Kohl Rabi
200 Heads Fine Celery	8 Dozen Sugar Corn

10 Messes Green Beans	50 Fine Muskmelons
25 Heads Finest Cauliflower	200 Pickling Cucumbers
25 Heads Cabbage	10 Slicing Cucumbers
20 Messes Spinach	5 Bushels Tomatoes
10 Messes Chard	2 Bushels Early Potatoes
20 Messes Asparagus	8 Quarts Lima Beans
10 Messes Salsify	3 Bushels Turnips
10 Dozen Carrots	3 Quarts Okra
10 Dozen Parsnips	3 Dozen Sweet Mangoes

At a low estimate these are worth \$40. Often they would cost much more to buy. But it is not only the market value of the vegetables, but the *freshness* and *fine quality* that should be considered. Green onions, radishes, green peas, beans, lettuce, spinach, and especially celery, rapidly lose their crisp freshness when gathered and exposed for sale a few days before they are used.

When grown in the home garden they come to the table with all their fine flavor unimpaired.

Then, for the business or professional man, who toils all day in office, bank, factory or shop, the change to the light physical labor in the open air and bright sunshine, gives just the needed change necessary for health of both body and mind. Such employment will be found restful and soothing to the overtaxed and wearied mind and nerves.

A love for digging in the soil seems inherent. Try it, and you will soon learn to look forward with pleasurable anticipations to the hour before breakfast, in the cool, dewy mornings, and the hour after supper, when the heat of the day is over, that you may spend in the light, delightful work of planting, hoeing and watering.

Watching the growth and development of the plants is a constant source of joy and delight.

You forget the cares and worries, and gather new courage for the morrow.

Indeed, Amateur Gardening appeals to most of us in a way that is totally unlike any other employment. The liking for the work seems intuitive: perhaps because it brings us very close to nature; possibly because there seems in the human mind a lingering memory of the Lost Eden. At any rate, this desire and taste for gardening is universal, and deserves to be encouraged, for it tends to tranquillity of mind, and is conducive both to health and longevity.

SMALL DETAILS

The author assumes that the reader is without practical knowledge of gardening. Hence the care in preparing this guide in describing and explaining even the most trivial details of the work, for success often depends upon the *small matters*, which most authors ignore, forgetting that many successful business men have neither time nor opportunity to master the minor details of a profession which demands work to which most men are strangers. Then it may be that there are boys, ten to fifteen years old, who can be interested in this fascinating work during the summer's vacation. It is certainly an ideal occupation for most boys, as it affords a method of outlet for surplus energy, while the sense of proprietorship, and the self-respect which always accompanies successful, productive endeavor, all aid in the formation of good, industrious habits and manly character. Give the boy



CELERY AND BLANCHING TUBES. SANDWICH BEDS.



TRUCK PATCH, WILLOW BROOK FARM.

a chance. It is far better than summer excursions to the country in doubtful company.

I would suggest that the family pay to the boy or girl a fair price for all the fresh vegetables used, as a just and reasonable recompense for the labor and care involved.

The family gets fresh vegetables at a fair price, and labor receives its just reward. Try it. Encourage the boys and girls in forming habits of industry.

THE SANDWICH SYSTEM

The method of growing vegetables of great earliness and superior quality, herein described, is new and entirely unique. By it, the products of the garden are always earlier, and at the same time of better quality than can possibly be produced in any other way.

Why is this method superior to other methods?

First—Finest vegetables can be grown on hard, stony, or alkaline soils, where ordinary cultivation would be utterly fruitless. Even where “made” soils, consisting mainly of brickbats and old wall plaster, the Sandwich Beds flourish. A solid rock, a paved street, or the tops of flat roofed buildings could be made into successful gardens by this method.

For best results plants need aëration at the roots. If air cannot penetrate to the roots the plant languishes and dies from suffocation. When the surface of the ground is covered with water, the plant suffers in the same way and for

the same reason. The Sandwich Beds can neither be drowned or smothered. The air circulates through the several layers of material, and if too much water is applied, it readily passes through the fibrous beds and does no harm.

Second—Fertility is placed just where it can be easily absorbed and assimilated by the plants.

Third—The fibrous nature of the bed causes it to warm up earlier than does the natural soil.

Fourth—While hydrant water must be supplied as often as needed, in practice it is found that this form of bed does not require as much water as would be supposed, for the decaying mass of fibrous material retains moisture in a way that is surprising.

All kinds of vegetables and most of flowering plants do wonderfully well on Sandwich Beds. Celery, spinach, endive, chard, cabbage, cauliflower, kohl-rabi, Brussels sprouts, etc., do exceptionally well. For peas, radishes, carrots, salsify, parsnips, etc., where the soil is fairly good, it seems best to first spade the ground as described in "The Modified Sandwich Bed," mixing in manure, and after raking fine and level, cover surface with a couple of inches of compost. This latter method is better for those vegetables that have long, penetrating roots.

Directions for Making Sandwich Beds

First—Place a layer of straw or stable litter or leaves, about five inches deep. Tramp or pack pretty firm and smooth.

Second—Spread over this a layer about one inch deep of rich, fine stable manure.

Third—On this place another layer of stable litter about two inches thick. Tramp or pack this down firm. Then turn on the hose, and give the mass a thorough soaking, but stop before leaching begins.

Fourth—spread evenly over the bed at least four inches of street scrapings, but avoid streets that have oil or asphalt in their make-up. If street scrapings cannot be readily obtained, use instead, a compost, of equal parts of fine river sand, rich garden soil and old, fine stable manure. Mix by shoveling over in a heap.

After all is in place, tramp till firm and it is ready to plant.

It has been found that autumn is the best time to prepare the Sandwich Beds. They will dry off and warm up very early in the spring. However, a spring-made bed is just as successful if the directions are carefully followed.

The Modified Sandwich Bed

It sometimes happens that the real Sandwich Bed is not possible or practicable; in such cases, if the soil is reasonably fertile, and in good condition, the following method may be successfully adopted.

Procure one load of rich stable manure for each square rod of ground and have it dumped on or near where the beds are to be made. With a spading fork, beginning at one end of the bed, spade a furrow across the bed; fill this furrow

nearly full of manure, tramp down firm; then spade another furrow, throwing the dirt over the manure thus tramped into this first furrow. Fill the second furrow with manure as before, and again throw the dirt upon this from the next line of spading, thus alternately filling furrow and spading, proceed until the entire bed is spaded. If this bed is made in autumn, use more straw, leaves or litter mixed with the manure. Then cover the entire surface with street scrapings or compost, as before described, and rake smooth.

After the first year with the Sandwich Beds there will be an abundance of compost, as all the body of the bed will be turned into compost of the finest quality.

There should be a generous supply of this compost on hand at all times, as it will be found very valuable for enriching flower beds, etc. It is also just what is needed for potting plants, and filling flats for starting early plants.

It usually happens that street scrapings can be had at a small cost if a convenient place for unloading is arranged, as it often saves a long haul to a public dump. And a modest tip to the driver will help. The real value of this material is not generally understood or appreciated.

TOOLS AND APPLIANCES

A steel garden rake, spading fork, small garden trowel, a long handled shovel, a manure fork, and a small hand sprayer are about all the tools that need be purchased.

The author uses a small hand sprayer which is cheap and very satisfactory. It has a quart

Mason glass jar for a reservoir, and has the advantage of blowing the spray at right angles from the barrel of the machine. With it the under side of leaves can be effectually reached, and this is often essential to success. The barrel should be of brass, as many spraying compounds are corrosive on iron. With this little machine, and a supply of Bordeaux Mixture, Hellebore, Tobacco Extract or Tea, Paris Green, Aphine, etc., the careful gardener is well fortified against attacks of insects and fungi. All these poisons should be supplied in advance, so as to be ready at a moment's notice, as delays are often costly. As some of the above articles are very poisonous, it is wise to keep them in a box, and under lock and key. The box should be large enough to contain all the needed poisons and the little sprayer. Directions for use will be found under appropriate heads.

In addition to the tools mentioned above, a "float" is very convenient. This is a board one-half inch thick, four inches wide, and ten inches long. A piece of broom handle, eight inches long, is firmly nailed to the center of the board, using at least four long, slim nails. This implement is used to make the surface of the bed smooth, likewise for firming the soil after the seeds are covered. The edge of the float may be used to mark off rows and for covering the seeds.

BOARD FRAMES

After the beds are made, the use of frames is desirable. These are made of common fencing boards, six inches wide. The frames should be

at least four in number, each twelve feet long and six feet wide. For convenience, these should be lightly nailed together, but not nailed so firmly as to prevent their being "knocked down" for winter storing.

Before planting, the frames are placed in correct position *on top* of the beds. A board six inches wide and four feet long should be provided, on which to kneel while planting seeds or transplanting small plants. In planting either seeds or transplanting small plants, begin at one end of the bed, and as planting proceeds, move backwards until the bed is completed.

The beds may be of any suitable length, and may extend in any direction, but the width should be uniform, and should be constructed a foot wider than the frames. There should be a walk on both sides of the bed, at least two feet wide, for convenience in planting, watering, and gathering the crop.

MUSLIN SCREENS

For protecting early plants from frost, and for giving shade to newly set plants, a half dozen muslin screens should be provided.

These are made of inch slats, six and one-half feet long, and exactly three feet wide, with a cross slat in the middle. Cover the frame with muslin a yard wide, of a quality costing about six cents per yard. Begin at one end, using small tacks, stretching the muslin pretty tight. Do not cut in single lengths, but stretch the cloth over the end, and tack it on both sides. This gives a dead air space between the muslin covers. These

screens are light, cheap, and are nearly, if not quite, as good as glazed sash, at less than one-fourth the cost, and no breakage of glass.

The screens are also useful in giving partial shade to such succulent plants as radishes, lettuce, endive and celery. By protecting these from the heat of the burning sun, greater crispness and brittleness is secured. Used in this way the frames should be supported on stakes two feet above the plants. If hard frosts threaten, first spread old newspapers over the tender plants, then place the screens on the board frames, and old rugs or carpets may be placed over all. In this way, early plants may be safely carried through pretty hard freezing without injury.

GROUP PLANTING

It does not seem desirable to have to be engaged in planting continuously. And it so happens that there are a number of different kinds of plants that do equally well when planted at the same time, so these have been assembled into groups, and all the work necessary for each group may be done at the same time.

It will be noticed that in the "First Planting" there are peas, radishes, beets, lettuce, and onions. These are semi-hardy, and should be planted early. The plan given need not be rigidly followed, for no two families are exactly the same in their likings. Greater or less quantities of each may be planted, or such things as are not wanted may be omitted entirely. The plans are merely suggestive, and may be varied to suit the taste of the planter.

The varieties, of course, may also be changed. Those named have been found satisfactory, but others may do equally well. These are given as an aid in selecting the seeds that will be needed. Order your seeds early, and buy only of reliable seedsmen.

If the available space is very limited, or if the planter has not time to grow plants that may be needed for transplanting, such as cabbage, tomato, cauliflower, celery, egg plants, etc., it is usually cheaper to buy them of a reliable grower. In this case the plants should be ordered in advance, to be delivered at the proper date, which the grower understands. When the plants are received, they should be set out promptly, selecting the evening, if possible, for the work. By shading the plants for a few days after being set out, there will be few failures. When transplanting, dip the roots in a puddle made of clay and water, about the consistency of cream, and in setting, press the soil *very firm* around the roots.

After the plants are established, remove the screens, or the plants will blanch and become tender. Always order a few more plants than are needed to fill the space allotted. Set the surplus plants in rich soil: water and shade them. These can be used later to refill vacant places, for accidents, cut-worms and other enemies are pretty sure to destroy occasional plants, and vacant places in the garden are unsightly.

QUICK GERMINATION

The best success in growing plants from seeds depends in a large measure upon quick and perfect germination, or "sprouting."

Seeds of plants are, primarily, germs, intended to produce young plants of the same genus. Besides the germ, the seed also consists of a packet of Baby Plant Food, containing exactly the elements necessary to furnish the nourishment needed to support the tiny plant until such time as will enable it to develop roots and leaves, so that it may be able to absorb and assimilate from the soil its own food, through natural means provided for this purpose. If germination is delayed or much retarded by unfavorable conditions, there is danger that this supply of food, contained in the seed, will be spoiled by fermentation or decay, and the helpless little plant will be starved. Even if the plant survives, it remains a stunted weakling that rarely ever recovers its normal vigor and vitality.

Who has not seen a corn field in exactly this condition, when germination has occupied two or three weeks? Nine times out of ten this spells crop failure. Try to secure *quick* germination: the quicker the better. The necessary conditions are fertility, warmth, moisture and aëration of the roots. In all these respects the Sandwich Beds supply ideal conditions.

Early in the season there is often a lack of sunshine and warmth, and, therefore, there is more or less trouble with seeds rotting. Nearly all of this can be easily avoided by sprouting the seeds

before planting. If the seeds are really worthless, the fact is discovered in time to secure a fresh supply. Plants started by sprouting possess more vigor, are more sturdy and thrifty, and will thrive and do well when poor, sickly plants would utterly fail. The author uses a home-made machine for sprouting that does the work admirably.

THE PLANT INCUBATOR

This is especially useful when early plants cannot be easily obtained from regular growers, or when special varieties are wanted, and the plants must be grown at home.

The author usually has one to three of these machines in constant use from March to May, for in the latitude of central Ohio, frosts and cold nights make it difficult to grow good *early* plants.

With this machine, fine early plants may be had in abundance and great variety, at a small cost. With it in the South, plants may be grown all winter, and be ready to transplant at any time desired, regardless of "northers" or sudden cold snaps.

The machines are heated with common kerosine lamps at a cost, on an average, of two cents for each twenty-four hours. Usually very little fire will be needed, except during cloudy, cold and windy days, and chilly nights, and by simply lighting the lamps, the plants can be safely carried over spells of unfavorable weather.

The Plant Incubator consists of a cubical box, two feet each way, with a roomy door in one side. This box forms the lamp chamber. The top is



PLANT INCUBATOR, OUT-OF-DOORS—COVER REMOVED.



ROCKYFORD CANTALOUPE AT WILLOW BROOK FARM.

open. A piece of sheet iron as wide as the inside of the box and four inches longer, has two inches turned up at right angles at each end. This is tacked to the inside of the box so that it will be held in place, two inches below the top of the box. The sheet iron receives and distributes the heat from the lamp beneath. The lamp should be so placed that the top of the chimney is four inches below the sheet iron. Cleats are nailed on the outside of the box above the door, and on the outside opposite, to support the air chamber, which is made of two boards six feet long and six inches wide, boarded over the ends and bottom, except where it is slipped over the top of the lamp chamber. This should fit snugly so that there will be no waste of heat. It is best to line the entire inside of both the lamp chamber and the hot air chamber with cheap asbestos paper, pasting it on with common flour paste. A small hole must be provided near the bottom of the lamp chamber for ingress of fresh air, or the lamp will not burn well. Three "flats" or shallow boxes, five inches deep, twenty-four inches wide and twenty-six inches long, will form the cover for the hot air chamber. Fill the flats with rich compost mixed with fine sand, and as soon as the soil becomes mildly warm, it is ready to receive the seed. The lamp heats the diaphragm of sheet iron, this in turn imparts its warmth to the hot air chamber and then heats the soil in the flats above. The flats should contain three inches of soil. In this the plants will thrive wonderfully.

Each flat will grow 150 plants. After the

plants are about two inches high, the author usually prepares three more flats which are placed next to the hot air chamber, and the ones containing the plants are placed on top of the new ones, thus one machine will heat six flats, which will grow 900 plants. During mild, sunny days, the upper flats are removed to a sheltered place through the day, and are returned to their position above the later plantings at night. A frame of twelve-inch boards fits outside the flats, and a cover of double muslin screens protects the plants during the night, or on cold, stormy days. The machine may be placed in a warm room by a window, in an unused room, on a sheltered veranda, or, after cold weather is over, it may be placed in the garden, or out of doors anywhere.

The hot air chamber furnishes ideal conditions for sprouting seeds in effecting quick germination.

SPROUTING SEEDS

Procure pieces of common burlap, each twelve by twenty-four inches. Pour the seeds on one end: fold the burlap from both sides: roll up and fasten with a pin. Prepare a label giving name, date, etc. Then into a pan containing half a pint of warm but not hot water, drop three or four drops of spirits of camphor. Now place the roll containing the seeds in this water for twenty minutes. Press out lightly so there will be no dripping; wrap in four or five thicknesses of old newspaper, and place where the temperature is regular and about seventy-five degrees. The hot air chamber furnishes exactly these conditions.

Examine the seeds daily, and if dry, water with lukewarm water. As soon as the germ shows, *plant at once*, or there is danger of losing the seed. With most of seeds there will be a gain of six to twelve days in time, and the seedlings will possess surpassing vigor. A fair trial will convince any one of the great merits of this method.

TRANSPLANTING

Tomatoes, cabbage, egg plant, cauliflower, celery and peppers are much more satisfactory if transplanted once or twice. They should be first transplanted when they have formed four leaves. Prepare a flat by filling in at least three inches of fine compost with enough soil to give it body. Pick out the plants and set pretty deep and firm in rows two inches apart, and two inches apart in the row. By using flats twenty-four by twenty-six inches, 150 plants will just fill a flat.

After planting, water well, and place in the Plant Incubator with flats sown with fresh seeds placed beneath them. This will usually make them warm enough for healthy growth. A small muslin screen for cover will help.

When the plants are four inches high, they should be again transplanted to small pots or old strawberry baskets, one plant to each, and set closely in flats which contain an inch of sand, or else if you have it, set them in a cold frame or pit. This, of course, is some trouble, but the greatly increased stockiness and sturdiness of the plants so secured will richly repay the extra labor. For extra early crops of tomatoes, egg plant, cauliflower and peppers, the plants may be

eight to twelve inches high when set out in the open ground. With some protection as given by the "boosters" plants will thrive and come to maturity greatly in advance of plants which have not been transplanted.

In transplanting to the open ground it is best to plant basket and all, after slightly crushing the bottom, just as the plant is placed in position. Give each plant a quart of water, and rake in some fine dirt to prevent the formation of a crust. Then by covering with a booster, the plant will start to grow at once. If the weather is very hot at the time of transplanting, turn the booster so that the glass will be on the north side. Two days later place the booster so that the glass faces the sun at ten o'clock, and ventilate by removing the cap during the heat of the day. In mild weather the cap may be left off altogether.

In the absence of boosters, a double thickness of newspaper, coiled in a conical shape and held in place by earth placed on the edges, will serve very well. The paper may be left on during cold, windy weather, but must not remain too long, or the plant will become blanched and weakened. The paper can be held in shape by using small nails as pins.

THE PLANT FORCER OR BOOSTER

With many kinds of vegetables, earliness is of prime importance. Extra early tomatoes usually bring a much higher price than those that ripen a few days or a week later. The same is true of slicing cucumbers, sweet corn, muskmel-

ons, etc. By use of the Plant Incubator and pots, paper bands or old strawberry baskets for individual plants, there can be a decided gain in the time required to get the plants ready for setting out in the open ground. But cold nights and cold winds, especially in cloudy weather, prevent anything like satisfactory growth after the plants are placed out of doors. The use of boosters at this time will be found a great help, as they protect the tender plants from cold winds and even from frosts, as the soil around the roots of the plants within the booster is several degrees warmer than that outside. By raking up the soil around the booster, additional protection is given. If hard frosts threaten, cover the plant, booster and all, with double thickness of newspaper, held down by dirt, the top of the paper held tight together with small nails or pins.

Protected in this manner, plants will not suffer even if the temperature goes down several degrees below freezing. Early sugar corn, tomatoes, cucumbers, muskmelons, very early cabbage and egg plant are greatly advanced by this means. Even Lima beans and watermelons may be advanced ten days by the use of the boosters.

The boosters are made of Flintkote or similar roofing. Two-ply will answer, though it will be found advantageous in the long run to use the heavier grade. This material does not warp or rot. It has stood the test for four seasons and looks as though it would last for four years more. When the season is over, the sheets may be unhooked, spread out flat, and stored in a small

space. They are really needed for only a month or two, and should not be allowed to lie around in the way, all summer.

HOW TO MAKE THE BOOSTERS

Flintkote roofing comes in rolls or sheets thirty-six inches wide, and thirty-six feet long. This allows exactly four strips, nine inches wide, to be cut as shown in the drawing. The long edge or bottom of the booster is twenty-four inches, and the short edge is fourteen inches. By reversing each time, and cutting as shown, there will be little or no waste of material. A single sheet will make seventy-six boosters, caps and all, when the glass used are eight by ten inches. For larger plants, cut the roofing into three strips twelve inches wide, twenty-six and sixteen inches on either edge, and use glass ten by fourteen inches. For very large single plants, or for forcing rhubarb, asparagus, and large plants, the material may be cut eighteen inches wide, thirty and twenty inches long, and glass twelve by twenty should be used.

The caps are of same material, and are cut in the shape of a letter D, and should be one inch greater in diameter than the top of the booster. The sides of the cap are bent down so that they will readily slide between the wire handles. The hooks are made of No. 11 wire, and should be nearly an inch longer than the width of the pane of glass used, so that the glass may slide easily into position. A small wooden wedge pressed between the wire and the glass will hold them securely in place. The bail or handle is also made

of the same size wire, and serves to carry the booster from place to place, and hold the cap in position. It will be found convenient in punching the holes for the handle and hooks, to first make a pattern and then, by placing a dozen or more sheets of the roofing in a pile, perforate the whole lot at one operation. This insures uniformity, which is important, as all the parts are then interchangeable.

The odor of the tar or asphalt which attaches to nearly all kinds of roofing, does not seem to be harmful to the plants.

USING THE BOOSTERS

Early cabbage, cauliflower and lettuce are nearly hardy, and need protection but for about two weeks. They should be "hardened" by leaving off the caps for a week; then the booster may be taken away and used on other plants, such as tomato and egg plants. But even with these tender plants they should not be left on too long. Usually the caps are first removed, and if the weather is suitable, the entire protection taken away before the plants become drawn.

For cucumbers, melons and squashes, the boosters furnish excellent protection against the striped beetle. By use of tobacco dust, and moth balls, it is easy to head off these destroyers, as the odors are more powerful and lasting inside the machine. To keep out the bugs when the caps are removed, substitute a cap made of fly-screen wire.

In using the booster, be sure to keep soil well raked up around the machine.

THE POST HOLE METHOD
FOR

GROWING MELONS, CUCUMBERS AND SQUASHES

The essentials for growing these vines and fruits in perfection are—

Fertility in available form,
Moisture, without “sogginess,”
SAND!

While all of these vines delight in a sandy soil, both kinds of melons will only reach their greatest perfection in size and flavor where there is much sand in the soil. It is *sand* that makes southern Indiana and Georgia famous for their melons.

The Post Hole Method is adapted to growing these luscious vegetables in limited areas, for a few hills can be made in odd corners and out-of-the-way places, the only natural condition necessary being that of plenty of sunshine. The soil is neither plowed nor spaded.

Preparation of the Hills

Dig a hole the size of a wash tub and about ten inches deep. In the bottom of this hole, and in the center of it, dig, with a common post auger, or a narrow spade, a hole two feet deep and ten inches in diameter. Fill the post-hole with coarse stable litter avoiding sawdust, and pack this down pretty firm. Fill the entire excavation with a compost made up of two parts sand, one part fine, well rotted manure, and one part good garden soil. Mix thoroughly by shoveling over several times. In finishing the filling, preserve the bowl-like depression toward the center. When

completed the hill should be about eighteen inches in diameter, and six or eight inches above the level. Several days before planting, pour into the depression, six to ten gallons of water to furnish a store of moisture. When the soil is again dry enough to "work," the hill is ready for planting.

Select the choicest varieties and buy the best seed obtainable. Plant ten seeds in a hill, and cover two inches deep. Nearly a week can be gained with this kind of plants by sprouting the seed as described in "Quick Germination."

For the striped bug or beetle, place two or three moth balls in the hill when the plants first break through the ground; or sprinkle tobacco dust, a handful to the hill, on the soil before the plants are up; or a lure may be planted, say two feet distant, in a circular furrow, using any cheap muskmelon, squash or cucumber seed, but use no tobacco on these. Permit the bugs to feast on the lure, which they will do to avoid the tobacco on the good plants. Kerosene, or common coal oil, mixed with lime or ashes and sprinkled over the hills, often helps.

For leaf blight in muskmelons, prevention is easier than cure. Get a pound each of sulphur and dry air-slaked lime. Mix thoroughly, and sow around the hill for three or four feet, on top of the ground, after the planting is done. This amount will be enough for a dozen hills. This is intended to destroy the spores of the fungus that cause leaf blight. Repeat after the plants are up, dusting the hill thoroughly. Or spray with Bordeaux Mixture, somewhat diluted with water.

Spraying should begin when plants are four inches high, and should be repeated every ten days.

Hills of melons, cucumbers and squashes should be placed at least six feet apart. If droughts occur, the hills may easily be watered by pouring water into the bowl-like depression, but before pouring the water, make several holes with a small stick down through the top soil, into the litter below. After heavy rains the same prodding should be done to prevent drowning of plants.

Managed in this way the yield of a few hills is enormous. The same treatment, outlined above for muskmelons, omitting the lime and sulphur, is given to squashes, cucumbers, and pumpkins.

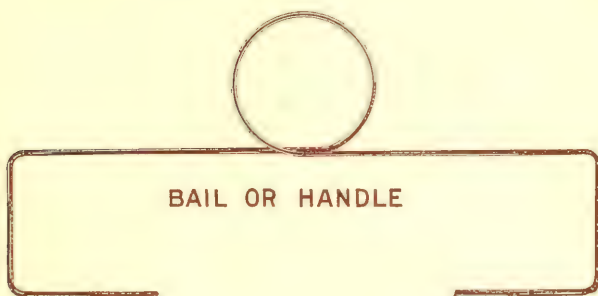
For "melon wilt" pour a bucketful of fine manure and road dust, mixed together, directly on the hill, completely covering the roots of the plants. Do this when vines are about two feet long. It is believed that the wilt is caused by sun scald of the stems near the roots. Covering these, *in time*, usually checks or entirely prevents this destructive disease.

SUCCESSION TO FIRST PLANTING

By the middle of May or a little earlier, tomato plants for early fruiting should be set. Usually the "First Planting" is out of the way or nearly matured, so that the same plot or bed may be set in early tomato plants, as marked by T in the diagram, regardless of the vegetables yet occupying the ground. By the time that the tomatoes get a good start, all the vegetables of the first



HOOKS



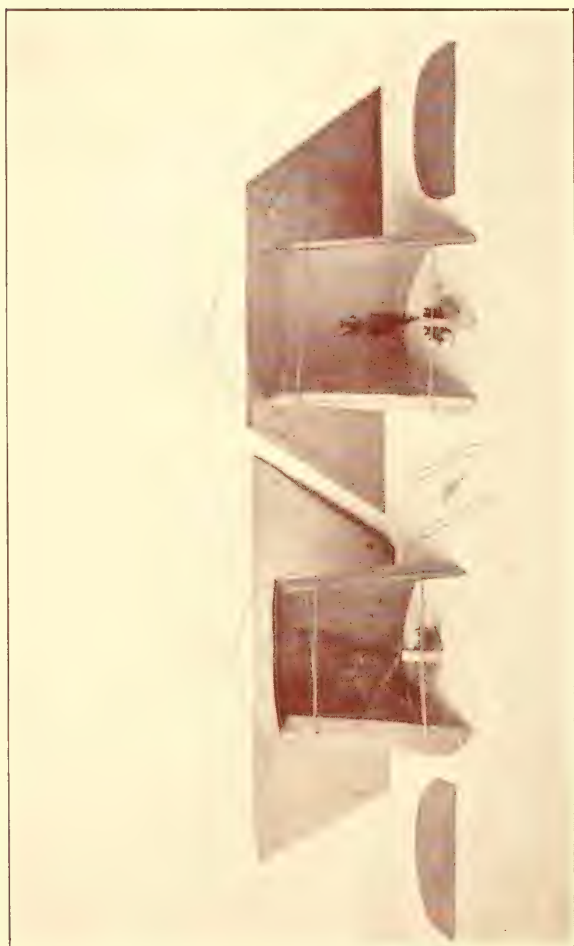
BAIL OR HANDLE



PATTERN
FOR
8X10 GLASS



TO CUT ROOFING WITHOUT WASTE
DETAILS OF PLANT FORCER OR BOOSTER.



PLANT BOOSTER.

planting will be gone, unless it be the onions, and these will not remain long enough to do any harm.

When the earlier vegetables are finally removed, rake the soil mellow, and mulch the tomato plants with litter or coarse manure, covering the whole bed four inches deep. This will conserve the moisture, and greatly improve the fruit in both quality and quantity. Twenty-seven plants are required to fill space as in diagram. Better order three dozen plants, and "heel out" the surplus for replacing. Varieties for this planting: Field's Early June, Earliana, Globe, Ponderosa. Other varieties that are good are Livingston's Stone, Bonny Best, Favorite, and Marketeer. For directions in growing extra early tomatoes, staking, mulching, and general cultural directions, see page 72.

The following ten pages show practical diagrams and complete detail directions for planting vegetables correctly.

.....	Peas	.....
.....	Peas	.....
.....	Radishes	.....
.....	Radishes	.....
.....	Peas	.....
.....	Peas	.....
.....	Beets	.....
.....	Beets	.....
.....	Peas	.....
.....	Peas	.....
.....	Lettuce	.....
.....	Lettuce	.....
.....	Peas	.....
.....	Peas	.....
.....	Lettuce	.....
.....	Lettuce	.....
.....	Peas	.....
.....	Peas	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....
.....	Onion (Sets)	.....

25 feet

6 feet

Date of planting: as early in spring as ground is dry enough to work—usually about March 25 to April 10.

This is written for latitude of Columbus, Ohio. Localities of 100 miles northward will be ten days later: same distance southward, ten days earlier. For 200 miles north or south, allow fifteen to twenty days; allowance should be made for elevation and local conditions also. The plants named are all hardy enough to withstand considerable frosts.

PEAS. *Varieties:* Early Alaska, Little Gem, Gradus.

Quantity of Seed: E. Alaska one-half pint; Little Gem one-half pint; Gradus one pint.

Distances: Apart in rows, two inches; Rows apart, twelve inches.

Depth: Two inches.

All these varieties require brush two feet in height.

RADISHES. *Varieties:* Icicle, Scarlet Turnip, Scarlet White Tip.

Quantity of Seed: One packet of each variety.

Distances: Rows apart, twelve inches; Apart in rows, three inches.

Depth: One inch.

BEETS. *Varieties:* Eclipse, Ex. Early Egyptian, Early Blood Turnip.

Distances: Apart in rows, four inches; Rows apart, twelve inches.

Quantity of Seed: One packet of each variety.

LETTUCE. *Varieties:* Grand Rapids, Black Seeded Simpson, Big Boston.

Quantity of Seed: One packet of each variety.

Distances: Apart in rows, three inches; Rows apart, twelve inches.

Depth: One-half inch.

If transplanted, set plants six inches apart each way.

ONIONS (Sets). *Varieties:* White, Red, Yellow.

Distances: Apart in rows, two inches; Rows apart, six inches.

Depth: Two to three inches. When fit to pull, remove two and leave one. Remove all of alternate rows; the remainder may mature for winter storing.

Quantity of Seed: One quart of each variety. Onion sets should be about size of end of small finger. If much larger they are apt to go to seed: if much smaller they lack vigor.

25 feet

..X.....X...	Cabbage	..X.....X..
..X.....X...	Cabbage	..X.....X..
..X.....X...	Cabbage	..X.....X..
..X.....X..	Cauliflower	..X.....X..
..X.....X..	Cauliflower	..X.....X..
..X.....X..	Cauliflower	..X.....X..
.....	Carrots	.....
.....	Carrots	.....
.....	Carrots	.....
.....	Parsnips	.....
.....	Parsnips	.....
.....	Parsnips	.....
.....	Salsify	.....
.....	Salsify	.....
.....	Salsify	.....
.....	Chard	.....
.....	Chard	.....

6 feet

Date: About April 10 to 20, or about two weeks after time of First Planting.

As these are principally root crops, it is desirable that the soil be spaded before construction of bed. The trenching method will give excellent results.

Where only a few cabbage and cauliflower plants are desired, it is cheaper to buy the plants of a reliable grower.

CABBAGE. *Varieties:* Early Jersey Wakefield, Late Flat Dutch.
Number of Plants: One dozen of each variety.

Distances: Eighteen inches each way. Remove outer leaves. Set deep. Shade for a week. Heel surplus plants in shady place, and use later to fill vacancies.

CAULIFLOWER. *Varieties:* Early Snowball, Danish Perfection.
Number of Plants: One dozen of each variety.

Distances: Eighteen inches each way. Remove outer leaves and set deep; shade for a week. Heel extra plants to fill vacancies.

CARROTS. *Varieties:* Chantenay, Early Danvers.
Quantity of Seed: One packet of each.

Distances: Apart in rows, four inches: rows apart, eighteen inches.

Depth: Half an inch.

PARSNIPS. *Varieties:* Hollow Crown.
Quantity of Seed: One packet.

Distances: Apart in rows, four inches: rows apart, eighteen inches.

Depth: Half an inch.

SALSIFY. *Varieties:* Mammoth Sandwich Islands.
Quantity of Seed: One packet.

Distances: Apart in rows, three inches: rows apart, eighteen inches.

Depth: One inch.

Sprout seeds of carrots, parsnips and salsify by use of wet burlap cloths. Ten days required for germination. Plant when germ first shows. Parsnips improve by being left in ground till needed in spring. Salsify may be dug as used. It is improved by light frosts. When dug store in sand in cellar. Chard: Varieties, Lucullus. Plant same as beets. Leaves are used as spinach: the stems are prepared like asparagus.

25 feet

.....	Parsley
.....	Parsley
.....	Peas
.....	Peas
.....	Spinach
.....	Spinach
.....	Peas
.....	Peas
.....	Spinach
.....	Spinach
.....	Peas
.....	Peas
.....	Lettuce
.....	Lettuce
.....	E. Ohio Potatoes
.....	Early Corn
.....	E. Ohio Potatoes
.....	Golden Bantam Corn
.....	E. Ohio Potatoes
.....	Country Gent. Corn
.....	Irish Cobbler Potatoes
.....	Country Gent. Corn
.....	Irish Cobbler Potatoes
.....	Country Gent. Corn
.....	Irish Cobbler Potatoes

6 feet.

Date, April 25 to May 5 or about ten days after "Second Planting." For succession, peas, lettuce and radishes may be now planted. Beds may be by "Sandwich" System, or by the trench method.

PARSLEY. *Varieties:* Moss Curled.

Quantity of Seed: One packet.

Distances: Apart in rows, four inches: rows apart, one foot.

Depth: Half an inch.

Seed should be sprouted by use of wet burlap cloths. Germination will require about two weeks' time. Plant seed quickly when germ first shows.

PEAS FOR SUCCESSION. *Varieties:* Gradus, Telephone.

Quantity of Seed: Half pint of each variety.

SPINACH. *Varieties:* Curled Savoy, Victoria.

Quantity of seed: Half ounce of each variety.

Distances: Apart in rows, three inches. Rows apart, one foot.

Depth: One inch. Sow seeds one inch apart: thin when up.

LETTUCE FOR SUCCESSION. See Lettuce in "First Planting."

POTATOES. *Varieties:* E. Ohio, Irish Cobbler.

Quantity of Seed: One-fourth peck of each variety.

Distances: Apart in rows, one foot: rows apart, two feet.

Depth: Four inches. Select medium sized potatoes for seed.

Cut in halves lengthwise. Start these in sand in shallow boxes, by placing in cellar or moderately warm room four weeks before planting. Sprouts should be about one inch above ground when planted out. By this method two weeks' time is gained.

SUGAR CORN. *Varieties:* Golden Bantam, Early Cory.

Quantity of Seed: One packet of each variety.

Distances: Apart in rows, two inches: rows apart, two feet.

Depth: Two inches. When three inches high thin to eight inches apart in row. The potatoes are usually dug and out of way in time for corn to mature.

25 feet

..X.....X..	Egg Plant	..X.....X..
..X.....X..	Egg Plant	..X.....X..
..X.....X..	Egg Plant	..X.....X..
..O.....O....	Okra	....O.....O..
..O.....O....	Okra	....O.....O..
..O.....O....	Okra	....O.....O..
.....	Bush Tender Pod Beans	.....
.....	Bush Tender Pod Beans	.....
.....	Bush Tender Pod Beans	.....
.....	Bush Tender Pod Beans	.....
.....	Bush Tender Pod Beans	.....
.....	Bush Lima Beans	.....
.....	Bush Lima Beans	.....
.....	Bush Lima Beans	.....
.....	Bush Lima Beans	.....
.....	Bush Lima Beans	.....
.....	Bush Lima Beans	.....

6 feet.



A SINGLE HILL OF SQUASHES—POST HOLE METHOD.

Five of the best specimens had been removed before the photo was taken.



SWISS CHARD LUCULLUS.

Use either "Sandwich" or "Trenching" System.

EGG PLANT. *Varieties:* Black Beauty, Mammoth Purple.

Distances: Eighteen inches each way.

Set rather deep and firm.

Number Plants: One dozen.

OKRA. *Varieties:* White Velvet, Perkins Mammoth.

Quantity of Seed: Half ounce each variety.

Distances: Apart in rows, four inches: rows apart, eighteen inches.

Depth: Two inches.

When plants are three inches high, thin to one foot apart.

BEANS, TENDER POD BUSH.

Varieties: Hardy Wax, Yellow Pencil Pod.

Quantity of Seed: Half pint each variety.

Distances: Apart in rows, three inches: rows apart, eighteen inches.

Depth: Two inches.

LIMA BEANS, BUSH.

Varieties: Burpee's Impd., Fordhook.

Quantity of Seed: Half pint of each variety.

Distances: Apart in rows, two inches: rows apart, eighteen inches.

Depth: One and one-half inches.

If Lima beans are planted with the eye downward they will germinate sooner. The beans should be pressed firmly in place before covering.

25 feet

.....	Peas	.....	.....
..T.....	Peas	.....T.....	.....T..
.....	Radish	.....	.....
.....	Radish	.....	.....
..T.....	Peas	.....T.....	.....T..
.....	Peas	.....	.....
.....	Beets	.....	.....
..T.....	Beets	.....T.....	.....T..
.....	Peas	.....	.....
.....	Peas	.....	.....
..T.....	Lettuce	.....T.....	.....T..
.....	Lettuce	.....	.....
.....	Peas	.....	.....
..T.....	Peas	.....T.....	.....T..
.....	Lettuce	.....	.....
.....	Lettuce	.....	.....
..T.....	Peas	.....T.....	.....T..
.....	Peas	.....	.....
.....	Onions	.....	.....
..T.....	Onions	.....T.....	.....T..
.....	Onions	.....	.....
.....	Onions	.....	.....
..T.....	Onions	.....T.....	.....T..
.....	Onions	.....	.....
.....	Onions	.....	.....
..T.....	Onions	.....T.....	.....T..
.....	Onions	.....	.....
.....	Onions	.....	.....
..T.....	Onions	.....T.....	.....T..

6 feet.

Date: May 10 to 25.

Varieties: Stone, E. June, Ponderosa, Earliana. Other good varieties Acme, Globe, Favorite, Bonny Best. It is usually cheaper to buy plants from a reliable seedsman, where only a few dozen are needed. Plants should be stocky, and six to ten inches high.

Number of Plants: To fill bed of "First Planting" will require twenty-seven plants—see Plat on preceding page. Order three dozen plants, and heel out the surplus for filling vacancies.

Water and shade for a few days. If frosts threaten, bend the plants down gently and cover with earth three inches deep. Uncover when danger of frost is over.

If plants are very long and slender, dig a trench three inches deep in any direction from where plant is to stand. Plant roots in trench, then bend down the stalk and cover with soil so that four inches of the top will come to the point where plant is to stand. It will take root where covered, and thus gain increased vigor.

When "First Planting" of vegetables are matured, remove and rake the soil mellow.

When plants are a foot high, set a stake six feet high, firmly by each plant, and as plant grows tie loosely to stake. Prune by removing slender, weak shoots. When plant reaches top of stake, top by pinching out terminal bud. Tomato plants are set where indicated by T in plan, "First Planting" is allowed to remain until matured.

SPECIAL CULTURAL DIRECTIONS

ASPARAGUS

TO grow asparagus successfully, the soil needs to be rich, light and deep.

Spade the bed as directed in the "Modified Sandwich" bed, only the soil should be stirred to a depth of full eighteen inches. Use old, well rotted manure, with an equal amount of sand.

Plant in rows lengthwise, and make three rows on a six-foot bed: one in the middle, and one on each side, a foot from the edge.

The plants may be grown from seed, but if two-year-old plants are used, there will be a saving of at least two years' time.

Most of nursery men and seedsmen sell asparagus plants. Care must be taken that the roots do not become dry, or they are almost sure to die.

Procure plants about April 20, and plant quickly. Set one foot apart in row, and not less than eight inches deep, the tops or crowns about six inches below the surface.

Two dozen plants will supply a family. These will occupy a bed six by eight feet, and will continue to produce for many years without replanting, but will need a generous top dressing of rich manure each fall after frosts. Also sow a pint of common salt, in autumn, to a bed of this size. No part of the garden is more profitable than the asparagus bed.

Conover's Colossal, and Mammoth White are good varieties.

BEANS, DWARF OR BUSH—TENDER PODS

These succeed admirably on Sandwich Beds. All beans are very tender and should not be planted until the ground becomes warm. Begin planting early in May, and for succession plant every two weeks until middle of August. Plant in rows eighteen inches apart, and three inches in the row. Cover two inches deep.

Livingston's Hardy Wax, and Wardwell's Wax are good varieties. One quart will plant 100 feet of row.

For *green* pods, Stringless Refugee is excellent.

BEANS, POLE OR CLIMBING—TENDER PODS

These should be planted about two weeks later than bush beans. Form hills three feet apart east and west, by four feet, north and south. Plant four beans in a hill, cover two inches deep, leaving space in center of hill for pole. Or plant two grains of sugar corn in each hill to support the vines.

One quart will plant 100 hills.

Kentucky Wonder for early; Old Homestead for main crop.

LIMA BUSH

These are grown same as other bush beans, but should be planted ten days later. Plant in rows two feet apart, and three inches in the row. Press the seed into the ground with the eye downward,

and cover two inches deep. Varieties, Fordhook, and Burpee's Improved.

LIMA BEANS—POLE OR CLIMBING

Plant one week later than other pole beans, in hills three by four feet apart, and five beans to the hill. Press seed in soil, eye downward, and cover two inches. Set poles eight feet long, firmly, one to each hill, and bring upper ends of four together, tent fashion, and tie firmly. If poles cannot be had, slats will answer.

Climbing Limas are more productive than bush, and are less liable to spoil in wet weather. Corn stalks will not support the great weight of climbing Limas.

Climbing Limas require a long season to mature, so do not defer planting too long or they will likely be caught by early frosts. Large White, and Dreer's Improved are good varieties. One quart will plant seventy-five hills.

BEETS

Beets are semi-hardy, and may safely be planted quite early. The seed should be sprouted, but plant when the germ first shows. Plant in rows one foot apart and four inches in the row. They will usually need thinning, as a single seed often produces several plants. When thinning cut off half of the tops, and transplant in vacancies or new rows. These will mature a few days later.

For late pickling, plant seed about middle of May.

One ounce of seed will plant seventy-five feet of row.

Early Blood Turnip, and Early Bassano are good varieties.

CABBAGE—EARLY

These do wonderfully well on plain Sandwich Beds or on the "Modified" Bed.

For extra early plants, sow seed in the Incubator flats in March, in rows four inches apart and two inches in the row, sprouting the seed first.

If the plants grow spindling, sift with hand fine sand between rows, until up to the seed, or primary leaves. This will insure fine stocky plants. Transplant to open ground as soon as ground is in good order, and when plants are five or six inches high. Set very deep, but do not cover the crown. If there comes severe cold weather, protect with several thicknesses of newspaper. They will withstand considerable cold. For cabbage worm use Hellebore. One ounce of seed produces about 2000 plants.

Early Jersey Wakefield, and Glory of Enkhausen are excellent varieties. Plant in rows eighteen inches apart each way.

CABBAGE—LATE

Sow seed about May 20 on Sandwich Beds in open ground. Sprout the seed, water well with hose, and shade with screens for several days, but not too long or the plants will be spindling. For cabbage fly dust with powdered tobacco leaves, wood ashes, or slaked lime *before* the plants are destroyed. Transplant about June 15 to rows two feet apart and eighteen inches in row. Set

deep and when well established hill up around the plant slightly.

American Savoy, and Late Flat Dutch are good varieties.

CARROT—EARLY

Long rooted plants do best on the Modified Bed. Sow seed where they are to grow, early in spring, in rows eighteen inches apart, and four inches in row. Cover half an inch deep. One ounce will sow 100 feet of row.

Early Danvers, and Chantenay are good varieties. Sprout the seed before planting.

For late carrots sow seed in May or first half of June.

CAULIFLOWER

Cauliflower is, in its nature, very similar to cabbage, and can easily be grown to perfection on Sandwich Beds. Sow seeds in flats in Incubator in February or March after sprouting the seeds. Plant in rows three inches apart and two inches in row. Cover one-fourth inch. Treat like cabbage plants. Transplant to open ground April 1 to 15, and set rather deep, in rows eighteen inches apart both ways. Early Snowball seems to be the favorite variety, and is really one of the very best.

Seed is usually high in price. One-fourth of an ounce will produce 500 plants.

For late crops sow seed about middle of May in rich soil, or on Sandwich Bed, and transplant like late cabbage when plants are of suitable size. If weather is very warm, shade for a few

days till plants are established. Cauliflower, like cabbage, needs frequent watering. Use same variety for late crop.

CELERY

This desirable vegetable is somewhat difficult and troublesome to grow by old methods. By the plan here outlined, gratifying success is, relatively, easy of achievement. Indeed the Sandwich Beds are perfectly ideal for celery growing.

The author has been able to produce, with uniformity, from 1000 to 1500 choice heads of fancy, high flavored celery for each square rod of Sandwich Bed.

Sow seed in March or first of April, in flats, after first sprouting the seeds, which are very small and usually germinate very slowly. In flats with the Incubator much time is gained. Sow in rows three inches apart, and about one quarter of an inch apart in rows. As many seeds will fail to germinate a little thicker sowing will insure a good stand. When plants are two inches high, pull up and transplant in flats, two inches apart, in rows which are three inches apart. Water well, and shade for a few days.

About first to middle of May, or any time even a month later, plant in open ground in Sandwich Beds, setting the plants exactly five inches each way.

In transplanting be careful to have the plants of uniform size, or the smaller and weaker ones will be crowded out by their more sturdy neighbors. Trim off at least one-third of roots and tops, and dip roots in "puddle" before setting.

“Puddle” is a thin mixture of clay and water, and should be about the consistency of cream.

Press soil very firmly about roots, then water freely, and shade with muslin screens for a few days. If any plants fail to grow, put in fresh ones, so there are no vacancies.

Water *frequently* and somewhat copiously. This is best done in the evening.

To stimulate growth, apply in dry state, nitrate of soda, by sifting the pulverized crystals, with the hand, *between* the rows, but be careful to keep it off the foliage. Use eight heaping teaspoonfuls to 100 plants, and repeat about twice, at intervals of ten days.

When plants are eight to ten inches high, do most of the watering by permitting the hose to lie on the ground between rows, as too much water on the foliage may induce rust.

In about six weeks from last transplanting, blanching may begin.

Take cheap, one-ply roofing felt, such as Flint-kote, or similar material, and cut in pieces sixteen inches by twelve inches. Bend in cylinders which should be about five inches in diameter, and twelve inches long. With small tacks fasten the edges together, lapping one inch. The tacks will hold better if there is an inch strip of the same material on the inside of the cylinder, where the lap is tacked. Use a two-foot piece of two-inch gas pipe as an anvil, on which to nail, fastening one end firmly in a vice. Now first lay the strip on the gas pipe, then place the lap directly over this strip, the cylinder encircling the pipe, and drive tacks through the three thicknesses, and clinch



LIMA BEANS.



GRADUS PEAS AND EARLY CABBAGE.

on gas pipe. Use about six tacks to each cylinder.

Next have your tinner make an "Enfolder" of light, galvanized sheet iron, No. 29, as follows:

Bend two strips of sheet-iron in form of half cylinders, so that when placed with concave sides towards each other they will form a complete cylinder. The proper size of strips is five and one quarter inches wide, and eighteen inches long. These will form a tube in two parts, three and one-half inches in diameter. Attach light hinges by riveting them *inside* of the half tubes, in such way that the two halves can be easily opened or closed.

For use, gather the leaves and stems of the celery in left hand, then with open cylinder in right hand, press the open face close against the plant, and as it is closed encircle the plant. Now drop the blanching tube over enfolding cylinder and all, and then withdraw the enfolding cylinder—and the plant is snugly placed *within* the blanching cylinder.

It is easily and quickly done.

The blanching will usually require about eight to twelve days, when the celery is ready for the table, or it may be allowed to remain in the tubes until wanted.

If weather is hot when blanching, place muslin screens, supported by stakes, about three feet above the ground, where blanchers are being used; otherwise sometimes there will be sun-scald.

After putting on blanching tubes, water only by allowing the nozzle of hose to lie on the ground. Do not spray *over* the celery while in tubes, though rain will do no harm.

Common drain tile will answer for tubing, but they are very heavy, costly, and liable to breakage.

When tubes are made of roofing they may be made in two sections, telescoping together. The advantages of this form, however, does not pay for extra cost and trouble.

About twenty-four tubes, or even a less number, will answer all purposes, as they are moved further along, and used again and again, as celery is cut for use.

The same results may be secured by simply wrapping each plant separately with sheets of Flintkote or similar material. The sheets should encircle the plant and lap over two inches, being held in place by two wire rings, four or five inches in diameter. These are dropped over the wrappers and are held in place by the "spring" of the material.

Light frosts do not hurt celery, but hard freezing will destroy it.

It may be removed to cellar, if taken up with some soil adhering, and packed, not too closely, in upright position, in boxes, but do not wet the foliage or stems after removal, or they will surely rot.

If only a few hundred heads are needed, it is usually cheaper to buy the plants of a reliable dealer, than to grow them yourself. Order plants about June 10. It is desirable to have a few extra plants to fill vacancies.

Golden Self Blanching is a very satisfactory variety. A single packet of seeds will produce a surprising number of plants.

Celery is usually grown as second crop, after peas, lettuce, radishes, onion sets, when used

green, etc. It may even follow early potatoes, or early sugar corn, but should not be transplanted later than July 1.

Fine, fresh, crisp celery is certainly a luxury, and well worth the trouble of growing.

For celery rust spray with Bordeaux Mixture. Repeat at intervals of ten days.

EGG PLANTS

Sprout the seed and plant in flats in March. Transplant to open ground last of May, setting plants pretty deep and firm. When well established hill up earth around the plants and press firm. Pick off the potato beetles by hand, or dust the plants with white hellebore or Paris Green.

One dozen plants will supply a family. Water freely for best results.

Varieties: Black Beauty, Mammoth Purple.

ENDIVE

Sow seed after sprouting, about middle of April, and when of sufficient size, transplant to rows twelve inches apart each way.

It may be blanched like celery in tubes, but requires somewhat larger tubes.

Nothing can be finer than endive when grown on Sandwich Beds, and blanched in this way.

If blanching is done in very hot weather, shade with muslin screens on stakes two feet high.

White Curled, and Green Curled are fine varieties.

For succession make three sowings a month apart.

KOHL RABI

Sow seed in March in flats, after sprouting. Transplant in rows ten inches apart each way, as soon as plants are of suitable size.

They are much like cabbage in their nature, and are managed in similar manner.

They must be used before full grown, as they will become tough with age.

Early White Vienna is a good variety.

CUCUMBERS

For early slicing, the seeds should first be sprouted and then planted in strawberry baskets—about ten seeds in each basket. This may be done as early as April 1. Then place them in an incubator or other warm place till the plants form the fourth leaf. Then remove to a mild hot bed, cold frame or cold pit; and as soon as warm weather approaches, harden off gradually. When settled warm weather is assured, say about the middle of May or a little later, set the plants, basket and all, in post hole hills, five by six feet apart. The hills should be protected with boosters until the plants are well established. Then remove caps for a few days until the plants are hardened and finally remove all protection. Sometimes it is necessary to retain the boosters as a protection against the striped beetle. In such cases two or three mothballs and a handful of tobacco leaves placed inside the booster will shoo him off. If the weather is warm, place a screen wire cap on the top instead of the regular cap. This keeps off the beetle and gives ventilation.

For the "wilt" pour a peck of sandy compost directly on the hill when vines are about two feet long, thus protecting the stems or vines near the roots from the burning rays of the hot sun, which doubtless cause this trouble. This must be done early. The "wilt" may be prevented, but it cannot be cured. Give the same treatment to melons and squashes. For growing pickling cucumbers, plant seeds from middle of June to August 1. About July 15 gives, perhaps, the best results.

CELERY-CABBAGE

This vegetable, recently introduced from China, resembles in flavor and odor our common cabbage. In appearance, it closely resembles well-grown Cos lettuce, while the stems look like celery.

It is an annual and requires cool weather to bring it to perfection. If planted in early spring, it soon sends up seed stems and ripens seeds which look like cabbage seed, only smaller.

It should be sown about the middle of August, in seed beds, and when three inches high, transplanted in rows two feet apart and eighteen inches apart in the row. It requires rich soil and frequent watering. The heads may be loosely tied, somewhat like endive, when it will blanch beautifully. It is served same as boiled cabbage. It is also fine when prepared as cole slaw, or as a salad like lettuce. It is certainly a valuable addition to our collection of edible garden vegetables. It is very subject to attacks of green aphid. Tobacco tea, not too strong, if applied frequently, will hold the enemy in check.

LETTUCE

Lettuce is of two kinds; those which grow loosely, and those which form heads.

For early, sow seeds in flats in March, and keep in Incubator until about two inches high, when they may be transplanted to open Sandwich Beds, setting plants six inches apart each way. Or the seed may be sown out of doors at time of "first planting." Rows six inches apart, and not closer than two inches in the row.

For early use, cut *all* of alternate rows. This will give remainder plenty of room.

In hot days shade with muslin screens raised one foot above top of plants.

For succession, sow every three weeks until middle of July. The later sowings must be shaded to secure fine, crisp quality.

Loose varieties: Grand Rapids, Black Seeded Simpson.

Head varieties: Big Boston, Crisp-as-Ice.

Trianon Cos, or celery lettuce, may be blanched like celery, when it is very fine.

All kinds are easily transplanted.

MELON—WATER

(For Musk Melon, see "*Cantaloupes*" in "*Post Hole Hills*.")

Water melons should receive precisely the same treatment as musk melons, except that lime and sulphur are not needed. In preparing Post Hole hills do not forget that water melons delight in plenty of *sand*.

Varieties: Water melons, Georgia Rattle-Snake, and Sweetheart. Musk melons, Ohio Sugar, Tip Top, Miller's Cream.

OKRA, OR GUMBO

Plant seeds about middle of May, in rows eighteen inches apart, and four inches in row. When plants are three inches high, thin to one foot apart.

White Velvet is an excellent variety.

The pods must be used when small, while tender.

For succession make two plantings, three weeks apart.

ONION SETS

Secure "sets" or bulblets about first of March, and for extra early green "pulls," start the bulbs in a box of sand. Put in a layer of sand, then a layer of bulbs, and cover with sand. Kept in a rather cool, dark place, they will soon form rootlets, when they are ready to plant. Rows may be six inches apart. Set the bulbs, right end up, or they will be crooked, and not more than two inches apart in rows. Plant them at least two or three inches below the surface.

When large enough to pull, remove two, and leave one, and remove *all* of alternate rows: the remainder may be allowed to mature for winter use.

Select bulbs for planting about size of end of small finger. If much smaller they are lacking in vigor, and are tedious to plant. If much larger they are apt to throw up seed stems.

Bulbs are white, red, and yellow. The white are generally preferred.

Egyptian, or winter onions, are set in September, when they will furnish green "pulls" very early the following spring. They are perfectly hardy.

POTATOES

Potatoes will do moderately well under almost any conditions, but for very best results, both in quality and yield, use the Modified Sandwich Bed.

I find it a very great advantage to start the seed potatoes before planting, by first cutting the potatoes in halves, and covering with sand or compost in a flat, placing them in a moderately warm room, preferably in the light, and thus permitting them to form roots, and start sprouts from the eyes, to a length of about half an inch before planting.

Do not water while thus starting growth. The object is to cause the potatoes to wither and make only short, stubby growths. If dampened and kept in dark the growths will be slender, soft, and white, while best results are secured by encouraging rather stunted growth, stocky, and of dark, deep color.

When thus treated they make a very vigorous growth and may be planted about middle of April or even later, and thus avoid having the tops frosted, as often happens if planted very early. Frosted tops always lessen the yield.

This way of starting the seed insures earliness in any event, and helps to avoid severe frosts.

At least two weeks are gained by this method. Cut and sprout seed about March 25 to April 1. Plant out of doors April 12 to 20.

Plant one piece in a hill, about twelve inches apart each way. Cover fully four inches deep, and be careful not to break off sprouts or roots.

Select medium sized potatoes. One peck will plant 100 hills.

Early Ohio is a very satisfactory variety. After planting is completed, cover the entire bed with stable litter, at least three inches deep.

When plants appear, pull out weaker ones, leaving but two stems to the hill. This thinning is absolutely necessary to complete success.

Treated as above described, the author has grown, on a space six by twenty feet, seven measured pecks of choice potatoes.

PEAS

The common belief that peas will do best on thin, poor soil, is not correct. They yield wonderfully well on Sandwich Beds, for early varieties, and on the Modified Sandwich Beds for late.

It pays to sprout the seed before planting: the "stand" is more even, and several days' time is gained.

Early sowings should be covered about one inch, but later sowings may be covered two inches.

Plant in rows one foot apart and quite thickly in the row, say one seed to two inches, for not all of the seed will grow.

After planting two rows, twelve inches apart, it is best to leave a space of three feet, then two rows more, and so on. The vacant space may be sown in radishes, lettuce, beets, or filled with onion sets.

For *very* early, choose Early Alaska, which is a smooth variety. Little Gem is a dwarf, wrinkled variety, and is also early. These require no brush. Gradus is a splendid variety, and is

second early. Telephone is fine for main crop. The last two require brush about two feet high, one to each foot of row. For succession plant every three weeks but not later than middle of June. Sometimes later planting will do well, but not often.

PARSLEY

Seeds of this plant germinate very slowly.

Sprout, and sow in flats, and keep in warm Incubator until plants come up. This may be done in March or April.

Transplant in rows one foot apart, and four inches apart in row.

Moss Curled is an excellent variety.

PARSNIPS

Sow on "Modified" Sandwich Beds as early in spring as weather will permit, first sprouting the seed. They germinate very slowly.

Plant seeds in rows eighteen inches apart: four inches apart in row. Cover half an inch deep.

They improve by frost, and may be left in ground where grown until spring.

For winter use take up in late fall, and store in sand in boxes in cellar.

Hollow Crown is an excellent variety.

PEPPERS

Plant seeds in flats and place in Incubator in March or April. Transplant last of May or first of June, two and one-half feet apart each way.

Chinese Giant and Ruby King are good varieties.



ONIONS FROM
SEED.



PICKLER ONIONS.



EARLY OHIO POTATOES.

PUMPKIN

Same treatment as water melon. For squash bug, dust vines with powdered tobacco leaves.

Winter Luxury is a good variety.

For "Jumbo" pumpkins, try True Pot Iron, often of gigantic size, weighing as much as 200 pounds.

If extra large size is wanted, pinch off all but one specimen, and give occasional watering. If rich earth is placed on the vines in several places, roots will form, and give the plant increased vigor.

GROWING PICKLER ONIONS AND SETS

There is an increasing demand for small white onions which are largely used in making mixed pickles and for other flavoring and canning purposes. These little onions are easily grown and it requires a very small area only, to produce abundance both for pickling and for sets for the following season. In sorting out the crop, the smaller bulbs are used for sets, and the larger for pickling. Only white varieties are grown for this purpose. Indiana Silver Skin has been found very satisfactory for both purposes.

The soil must be light and very rich. If sand is used, see that it is worked into the soil evenly. The beds should be about six feet wide. In sowing, begin at one end, using a board to kneel upon, make a shallow furrow crosswise of the bed, five inches wide and one-half inch deep. Into this furrow, sow the seed very thickly and evenly. Cover with sandy soil one-half inch deep and press firm and smooth. Then leave a space eight

inches wide and make a second furrow, and so on until the entire bed is planted. Pull out any weeds that come up, and cultivate the eight-inch "middles" often. Nitrate of soda, one-fourth pound to the square rod, may be used to stimulate the growth. Apply before a rain, between the rows, as it must not touch the foliage. When the tops of the onions begin to die, the bulbs should be dug, choosing a clear, dry day. If the weather continues dry and fair, they may be left on the ground for several days, after which they should be placed in shallow trays or boxes and stored in a cool, dry place, where it will not freeze. Dampness will cause them to sprout.

If colored varieties are preferred, try Red Wethersfield, Yellow Globe, and Brown Beauty. All are productive, and are good keepers. If seed of Prizetaker is sown in flats, after sprouting, about March 1, and transplanted about the middle of April, in very rich soil, extra fine bulbs of largest size and finest quality may be secured. Sow seed in rows three inches apart and about one-half inch in rows. Cover one-half inch, and set in a place not too warm. When the plants are an inch high they may be stimulated with a little nitrate of soda, sown between the rows. Transplant out of doors, setting in rows sixteen inches apart and six inches apart in the row. For extra fine specimens, use nitrate of soda at intervals of four weeks, one-fourth pound to the square rod.

PIMENTOES

Pimentoes are a variety of peppers similar to sweet mangoes. Up to this time the best have

been imported from Spain, but they can be grown to perfection in Ohio. They are a tropical plant and require a long season to mature them properly. It is best, therefore, to start them in an incubator, greenhouse or hot-bed, very early. Sprout the seed and sow in flats early in March or the latter part of February. They thrive best in a warm, sunny location and must not be allowed to remain long in a temperature below fifty degrees, or they will drop their leaves and thus suffer a severe set-back. They are liable to be attacked by the green aphid or plant louse and must be sprayed frequently with tobacco tea, made rather strong. Care must be taken to reach the under sides of the leaves, else many will escape. When the plants are two or three inches high, they should be transplanted into strawberry baskets or three-inch pots, and kept in a warm, sunny corner until settled weather, usually about the last of May, when they should be planted out of doors in rich soil. The plant forcer or booster will greatly assist in giving the tender plants a good start, though they must not be kept on too long. Do not plant pimientos near mangoes or hot peppers, as they will mix. The famous Pimento Cheese owes its excellence to the use of pimientos which give it a peculiar flavor. The plants are not subject to attacks of insects after they are set in the open ground. The ripe pimientos are very beautiful, and may be canned for winter use, same as tomatoes. The genuine Spanish are somewhat flat, or oblate in form, very meaty, and have small seed cavities.

RADISH

The radish thrives exceedingly well on common Sandwich Beds. There should be plenty of sand in top layer of compost.

Sprout the seeds, and sow at intervals of three weeks, from March till September.

If gypsum or land plaster is sown over the beds before planting, a quart to the square yard, the quality will be greatly improved. Mix by raking the soil.

For winter radishes, sow about June 1st. Succession may be had by sowing all kinds mixed, but the later ones will lack in crispness.

Sow radishes in rows twelve inches apart, and *not closer than three inches* in the row. Cover on inch deep.

Icicle, Scarlet Turnip, and Scarlet White Tip are excellent varieties.

To be good, radishes should grow quickly, and great care must be taken to avoid thick seeding.

RHUBARB OR PIE PLANT

Make a post hole hill, only the hole should be wider. Procure in early spring divided roots, and set one in each hill, and pack rich soil closely and give a good watering.

Do not pull stems the first season. Never permit the flowering stems to remain, or the plant will be greatly weakened. Pull them out as soon as they appear. Give additional manure each fall. The ground cannot be made too rich.

If one-year seeding roots can be had, they are much better than divided old roots.

RHUBARB IN WINTER

If rhubarb roots are dug about the first of December, or a little earlier, left exposed to freezing for a couple of weeks, and then placed in suitable boxes and removed to a warm cellar, they will push up beautiful red stems that are splendid for stews or pies. The clumps must be at least three years old, and they must be allowed to freeze hard before they are put in the cellar. If the clumps are too large for handling, they may be divided with a sharp spade, but divisions should not be made too small. Soil, sand, or compost should be packed around the roots, and the box should be deep enough to hold compost sufficient to cover all parts of the plant. Water moderately, but frequently. Light is not essential, as they seem to do best in partial darkness.

After gathering the stems until spring, the clumps may as well be thrown away, as they are exhausted, and are worthless for planting again.

A gain of two or three weeks in earliness may be made with rhubarb, out-of-doors, right where the clumps grow, without digging, by placing barrels without heads over the clumps. Pack stable manure close about and between the barrels, but on the outside, about eight inches deep. Treated in this way, the clumps are not injured in any way, and may be left standing from year to year.

SALSIFY, OR OYSTER PLANT

Salsify does best on "Modified" Sandwich Beds. Sprout the seed same as parsnips. Sow early in April in rows eighteen inches apart, and three inches in row. Cover one inch.

Salsify may be dug as used, or it may be left in the ground all winter. Light freezing rather improves it.

For winter's use dig and store in sand in box in cellar.

Mammoth Sandwich Island is a fine variety.

SPINACH

Sprout the seed, and sow in hills or rows twelve inches apart, and about three inches apart in row. Cover one inch. Sow at intervals of three weeks for succession. For late, sow in September.

When weather gets warm, shade with screens supported on stakes two feet high.

SUGAR CORN

Plant all kinds of sugar corn in rows four feet apart and about eight inches apart in rows. But first sprout the seeds, and reject any that do not start vigorous growth. Cover two inches deep.

It is useless to plant before the ground is warm, for seed will rot, but if seed is carefully sprouted they may be planted a week earlier on Sandwich Beds than on ordinary soil. By this plan ten days' time is gained over other methods.

Corn may be grown with Early Ohio potatoes, as shown in third "Group Planting." This plan is designed where the available area is very limited. If there is room, separate planting is recommended.

For succession plant every three weeks till July.

Golden Bantam for early: Country Gentleman for late.

SQUASH

Squashes require same treatment as water melons. For squash bug use white hellebore. For striped bug use powdered tobacco leaves a handful to the hill, scattered directly over the small plants just as they emerge from the soil.

Sow ten or twelve seeds to the hill, and after danger is over, thin to two strong plants to the hill. Cover two inches, and firm the soil slightly. If squash bugs become numerous and destructive, pick by hand, and drop them into a pan into which there is a little coal oil. If left undisturbed they will quickly ruin the crop.

For winter's use pull before frosts, and store in a cool room where it does not freeze.

Delicata and Banana are superior varieties.

SWISS CHARD

This unique vegetable deserves more attention than it usually receives. It belongs to the beet family, but the stems and leaves are used and not the root.

Stems may be used like asparagus, or leaves and stems may be prepared like spinach. They are excellent either way.

Sprout the seed, and sow in rows eighteen inches apart, and twelve inches apart in the row.

Give plenty of water.

Pull the leaves freely: the more you use, the faster they are renewed. A few plants will supply a family.

There is but one variety—Lucullus.

It transplants easily, so vacancies can readily be filled.

TOMATOES

Of all vegetables grown in the garden, the tomato is easily the King. Its use is almost universal and its popularity is undisputed. It is eaten raw when ripe, fried when green, made into stews, pickles, soups, ketchup, etc., and in some form is found on our tables the year round, and is relished by all. Its wholesomeness is unquestioned. It is canned in enormous quantities, and is a staple article with all dealers in canned goods.

The development of the tomato from the insignificant little "Love Apple," which our grandmothers grew in flower pots as a curiosity, to the perfect fruit of to-day, seems in itself like magic. The original type was about the size of a well developed Concord grape, and like the grape, grew in clusters. Compare these with good specimens of Earliana, Bonny Best, Ponderosa, or those marvelous creations of the Livingstons', the Globe, Stone, Beauty, Favorite, Perfection, or Golden Queen, whose fancy names scarcely do justice to their real merits, and the wonder of it all is at once apparent.

I have been asked which were the very best tomatoes. The answer seems easy: The very first ripe specimen in the spring, and the last one of the season! There is no question but that *earliness* is a very desirable quality, whether grown for home use or for market. The demand is usually so great at the beginning of the season

that good stock finds ready sale at fancy prices. There is not a great deal of difference in varieties as regards earliness. Age, vigor, methods of culture, training, soil and protection usually make for earliness or lateness, though a few varieties have been found that possess some advantage in the way of early ripening. In our experiments, Earliana and Early June seem best. Both are of good quality and size. The Early June seems to lead in size, productiveness and earliness, though in the latter respect it has a very small margin in its favor. For early market we have found it to be a veritable "money-maker."

The methods hereinafter described are intended for those who grow extra early tomatoes in the open ground, for market, but the system may be successfully practiced by the amateur on limited areas. If but a few plants are wanted it is always cheaper to buy them of a reliable grower. In such case, be sure to order well in advance so as to be certain that you will get them when wanted, and always order a few more than you will need. The surplus are carefully heeled out and kept to replace any that die in transplanting, or that meet with accident. For extra early, the plants should be ten or twelve inches high, rather stocky, well rooted, and should show some blossoms before being transplanted to the open ground. They should receive careful handling so that the growth is not checked, for any check in growth means loss in earliness. If a large quantity of plants are wanted, it is best to grow the plants at home.

For extra early tomatoes seed should be sown as early as March 1, or even two weeks earlier. Tomato seeds are slow in germinating under ordinary conditions. We have been very successful by pursuing the methods described, for we have succeeded in ripening the crop two or three weeks in advance of those grown by the ordinary methods.

The seed is first sprouted. To do this, it is spread about one-fourth of an inch deep on a strip of burlap which is twelve by twenty-four inches in size. The burlap is then folded down from both ends, over the seed and rolled up and fastened with pins. A label is also prepared and attached, giving name of variety, date, and other information desired. Then, into a pan containing half a pint or more of warm but not hot water, pour three or four drops of spirits of camphor. Now place the roll of seeds in this water and leave for one-half hour. Press out lightly, so that there will be no dripping, wrap the roll as it is, in five or six thicknesses of old newspaper; wet, and place where the temperature is regular, and about seventy-five degrees. The hot air chamber of a Plant Incubator furnishes exactly these conditions. Examine the seeds, and water as often as needed. If conditions are kept right, germination will show within four to six days. As soon as the germ appears, plant at once, or there is danger of losing the seed. The seed should then be sown in flats or shallow boxes in which there is about three inches of rich, sandy compost. The flats should be of uniform size, twenty-four by twenty-six inches, and five inches deep. Cleats



FIELD'S EARLY JUNE TOMATOES.



CANTALOUPE, STAKED TOMATOES, AND SUGAR CORN, WILLOW BROOK FARM.

should be nailed across each end, on the outside, to assist in handling, and lifting about. Press the soil or compost firm and smooth. Then make shallow furrows about three inches apart. This will allow seven rows running lengthwise of the flat. Into these furrows, carefully drop the seeds about one inch apart and cover one-half inch deep, and press the soil smooth. Prepare a thin wood label, giving variety, and date of planting, and tack this securely to the end of the flat. Otherwise there is danger of the record being lost or interchanged. It pays to be careful with your records.

The flats may be covered for a few days with several thicknesses of old newspapers to retain both heat and moisture. The Plant Incubator is the ideal place for the flat, but if this is not available, place the flat on the staging of a greenhouse, or near a sunny window in a warm room. The temperature should not be permitted to fall below fifty degrees, even at night. A well managed hot-bed does well for this purpose, but it must be very carefully controlled, or the plants will be "spindling" and tender. This can be avoided by giving careful ventilation on mild days. When the plants have formed the fourth leaf, they should be transplanted into other flats and set three inches apart each way. Do not pull up the plants, but lift them one at a time, by using a sharp splinter. Set them rather deep, and press the soil firm. Give them a good watering, and shade for two days. If only each alternate plant is taken up, the remainder may be permitted to remain where started. But the soil should be

pressed down firm, and the plants given a good sprinkling, and shaded for a day or two. Otherwise they may wilt and get a set-back.

When the plants are four inches high they should be again transplanted, this time to common quart strawberry baskets, using rich soil or compost. Press soil very firm, water well, and keep shaded a few days as before. The baskets with plants may then be placed in similar flats and kept in a warm, sunny place.

About the middle of April the plants, baskets and all, should be moved to a cold frame, or what is better, a cold pit. The difference between the two is that a cold frame is built on top of the ground, usually because of insufficient drainage, while the cold pit is excavated to a depth of eighteen inches or more in the ground. But for a pit, the drainage *must be good*. With either cold frame or pit it is best to use double frames, one within the other, leaving a space of five or six inches between the outer and inner frames. This space is filled with sawdust, litter, common soil, or sand. The frames should be at least thirty inches high at the back, and a foot less in front, to give the proper slope and admit sunshine. The covering is with glazed sash: if double glazed, so much the better. Good lumber should be used, and all parts should fit neatly so as to exclude frosts and cold winds.

Hot-bed or cold frame sash usually come in six-foot lengths, but it is better to get the sash first, and build the frame to fit, so there will be no mistake as to dimensions. The inside frame should extend to the bottom of the excavation, but the

outside frame may rest on the surface of the ground. Bank up outside, to the top, all around, and pack the soil firm. The pit should be ready by March first, and may be used to harden off extra early cabbage, cauliflower, kohlrabi, or other half hardy plants, which are started in the incubator or dwelling. These are usually ready to set in the open ground before the pit is needed for tomatoes, mangoes, and egg plant.

Horse stable manure is packed firmly in the bottom of the pit to a depth of about three inches. Then place the baskets containing the plants on this closely together. Work in compost between the baskets wherever possible, and sprinkle enough compost over the whole to conceal the baskets. Water rather lightly with luke warm water. They must not be watered too much or they will "damp off." On sunny days give ventilation between ten A. M. and three P. M. by raising each alternate sash about three inches at the upper end. In case of frosts, cover the sash with blankets or carpet.

Plants grown in this manner should be ten to fifteen inches high by the middle of May or a few days earlier, when they may be set out on a Sandwich Bed, or the open ground. If in the latter, the soil should be naturally fertile or made so by the application of well rotted manure, a shovelful to the hill, mixed with the soil after plowing or spading.

The rows should extend east and west, and be at least five feet apart, with plants three or four feet apart in the row. If the plants are to be staked, they may be grown closer, say thirty

inches in the rows which are four feet apart. In using the "Fodder Mulch," to be described later, the wide spacing is necessary.

Holes about six inches deep are dug at proper distances and the plants, baskets and all, are planted so that the basket is entirely concealed. In setting the plants in position, gently crush the bottom of the basket so as to give the roots chance to penetrate the soil beneath. After the plant is in place, give it at least a quart of water, and when that has soaked away, draw a little fine soil around the plant to prevent "baking."

Some protection should be given at once. The Plant Forcers or Boosters, described elsewhere, are ideal for this purpose. For the first two or three days, turn the glass to the north. After the shock of transplanting is over, turn the booster around so that the glass faces the sun at ten o'clock. In warm, sunny days remove the caps for three or four hours in the middle of the day. When the plants are established, leave off the caps for several days, and then remove the boosters altogether unless late frosts threaten.

STAKING AND CARE

Plants may be supported by single stakes. This is best accomplished by driving a heavy stake about four feet in length a few inches from the root of the plant. This should be driven deep enough to insure firmness, or winds will prostrate the plant with its load of fruit, especially after heavy rains. To this stake, wire a lath or pole about six or eight feet long, using No. 11 wire. Draw the wire close and tight, both at the top of

the stake, and also near the ground. The tomato plant is then tied with a soft string to the pole or lath at intervals of about a foot. The side branches are thinned, and when the plant has reached a suitable height, the terminal bud is pinched out. Rather severe pruning is best.

The "three stake" method consists of the use of common plastering lath driven, edge-wise towards the center, in a triangular form, the base about ten inches each way, and the top somewhat less. Around the lath, in spiral form, is passed a common binder twine, looping it at each lath. The plant inclosed is trained to grow straight up, extending its side branches through spaces between the lath and the twine. Tolerably severe pruning is advisable, also topping.

But best of all methods, especially for large areas, is the "Fodder Mulch." This consists of mulching the entire row, *on south side only*, with any suitable mulch, though corn fodder is the best of all materials for this purpose. Placing this mulch on south side only, allows the foliage to shade the fruit and prevents sun scald. The plants are then trained to lie on the fodder, which affords a clean support for the vines and fruit. The fodder serves to conserve the moisture. It also absorbs extra heat during the hot day, and radiates it at night, thus greatly aiding in early ripening without sunburn. This plan is cheap, quickly done, permits the plant to follow its natural habit of sprawling, or straggling, and will be found to set and ripen more fruit than when the plants are staked, and to ripen them some days earlier.

Plants mulched with fodder will usually set and ripen double as many fine fruits as those trained to stakes or left to straggle on the ground, because the warm, sunny, sheltered bed attracts those insects which are necessary to effect perfect pollenization. Early tomato plants often fail to set fruit because the cool weather of early summer does not invite visitation of insects.

Growth and ripening can be accelerated considerably by the application of nitrate of soda, after the plants start growth in the open ground. Use a small teaspoonful of crushed crystals to the plant, sowing broadcast on the top of the ground, around the plant, but be careful that it does not touch the leaves, or they will be injured. Repeat this every ten days until the fruit is full grown.

For varieties I would choose Field's Early June, and Earliana for first early. The former is slightly earlier and more productive. For main crop, Stone, Globe, Favorite, and Ponderosa. The Ponderosa is sometimes rough, but is unsurpassed for slicing. Bonny Best is of excellent quality, but as yet is somewhat variable.

TURNIPS

Turnips may be sown in April and May, but rarely do well. For late, sow in August or early half of September. Sow in rows twelve inches apart, and ten seeds to the foot. When well started, thin carefully to six inches. Neglect of thinning will spoil the crop.

After sowing the seed, the ground should be tramped firm, and then given a good soaking. If

shaded with muslin screens for a few days, a better stand is often secured. Turnips may be used to fill vacant places made by removal of other crops.

SUCCESSION

*These may be planted for succession at any time
between dates named.*

SEEDS

Lettuce	April to August.
Radishes	April to September.
Beets	April to August.
Sugar Corn	May to July.
Beans	May to August.
Cucumbers	May to July.
Endive	April to August.
Peas	April to July.
Potatoes	April to June.
Spinach	April to September.
Turnips	April to August.

PLANTS

Cabbage	April to July.
Celery	April to July.
Peppers	May to July.
Tomatoes	May to July.
Kohl Rabi	April to August.
Cauliflower	April to August.

For *late* planting choose *early* varieties.

CULTIVATION

The Sandwich System does not require that the plants receive much hoeing or other cultivation. Usually a little stirring of the surface soil, and

the pulling out of weeds is about all that will be necessary.

A very narrow hoe should be provided. The author had such an implement made by his blacksmith, at a cost of fifty cents, which gives excellent results.

The blade was made of tool steel, about width of a butcher-knife, only it was bent into a curve like the letter "J," the lower end pointed, and with both edges made sharp. A light handle was purchased at hardware store.

FERTILIZERS

If additional fertilizers are needed the following will be found excellent for the purpose:

Nitrate of Soda. One-fourth pound to the square rod.

Apply after plants are above ground, being very careful to keep it off the leaves.

Pulverize and apply before watering. Repeat at intervals of two weeks. This will give quick and rapid growth.

Costs about five cents per pound.

Raw Bone Meal. Apply broadcast, and rake in soil before planting, one pound to square rod.

Costs about three cents per pound.

Wood Ashes. Apply broadcast before planting, and rake in soil, two pounds (two quarts) per square rod.

WATERING

Of course, by the Sandwich Method of Gardening, success can only be attained by the supply of plenty of water, for otherwise the plants will soon

perish. Most cities and towns, and even villages, now have water-works, and the supply is constant and ample.

Watering should be done in the evening, if best results are to be obtained, and it is much better to water profusely once or twice a week than to give a light sprinkling oftener. In very dry, hot and windy weather it may be necessary to water every other day.

Some plants require much more water than others, notably celery, spinach, cauliflower, lettuce, and radishes. Peas and beans require less, but should not be allowed to languish for lack of water. Celery especially wants plenty of moisture, but it is usually best to allow the water to soak into the ground without permitting the leaves or foliage to become wet, because if the latter is kept wet, rust and blight may ensue. This is especially true when the plants get to be six inches high or larger. At this stage of growth, water the roots only. This can be done by laying the hose on the ground in the middle of the bed, and permitting a light flow. Let this continue until the ground in the bed is thoroughly soaked.

Most plants are better off if the water is sprayed directly on and over them. Sometimes, in very hot weather, lettuce and endive will rot if too much water is supplied.

For cantaloupes, squashes, cucumbers, watermelons and pumpkins, water in the manner described in the chapter on cantaloupes, but stop watering as time of ripening approaches.

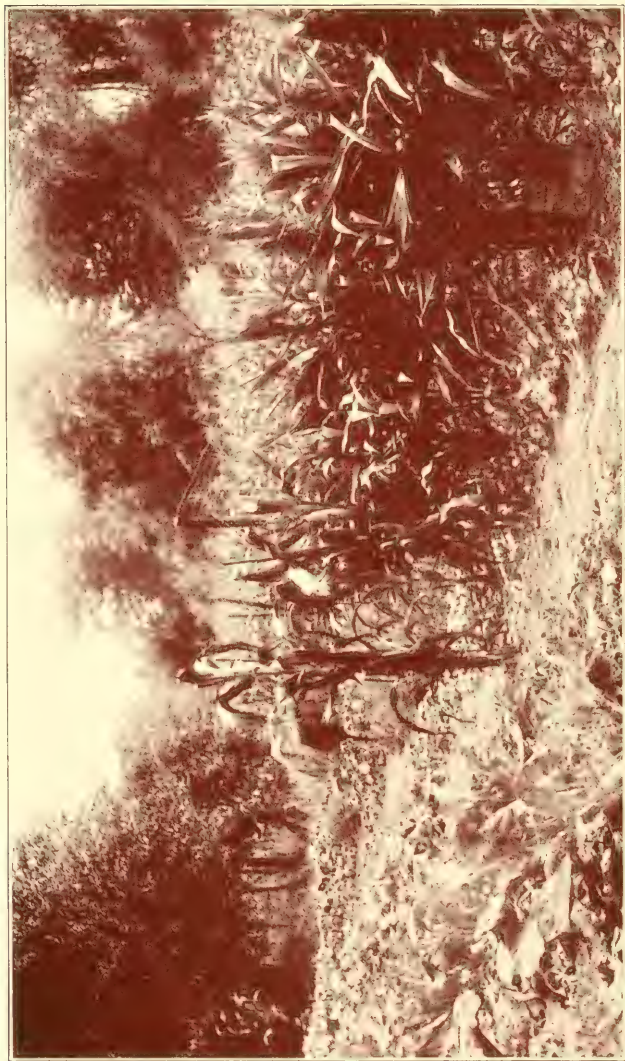
All these plants are better for a liberal supply of water at intervals of a week or so; especially is



EVERGREEN
SUGAR CORN.

GOLDEN BANTAM
SUGAR CORN.

RICE POP CORN.



CAULIFLOWER AND BABY GOLDEN POP CORN.

this true of cucumbers. When grown by the Post-Hole Method, and liberally watered, their productiveness is marvelous.

TRANSPLANTING TABLE

<i>Readily Transplanted.</i>	<i>Difficult to Transplant. Best to sow seed where wanted.</i>
Asparagus	Beans
Beets	Carrot
Cabbage	Corn
Cauliflower	*Cucumber
Chard	*Melon, Water
Celery	*Melon, Musk
Egg Plant	Parsnips
Endive	Peas
Kohl Rabi	Pumpkins
Lettuce	Radish
Onions (from seedlings)	Salsify
Parsley	*Squash
Pepper	Turnips
Tomato	Okra

Seeds of the following are usually sown in hot-beds for setting out in garden as soon as weather and soil permit. Can be started in Incubator.

If only a few plants are needed it is cheaper to purchase of a reliable seedsman or plant grower than to attempt to grow them:

<i>Vegetables</i>	<i>Flowers</i>	<i>Flowers</i>
Early Cabbage	Asters	Stocks
Early Cauliflower	Balsams	Verbena

* These may be started in pots and with care may be transplanted to open ground.

<i>Vegetables</i>	<i>Flowers</i>	<i>Flowers</i>
Egg Plant	Cannas	Pansy
Endive	Carnations	Heliotrope
Kohl Rabi	Coxcomb	Marigold
Lettuce	Cosmos	Phlox
Onion (seed)	Dahlia	Larkspur
Pepper	Dianthus	Moonflower
Tomato	Ricinus	Zinnias, Etc.
Beets	Salvia	
Chard		

DATES FOR PLANTING IN THE SOUTH

The dates here given are for latitude of Jacksonville, Fla., Mobile, Ala., New Orleans, La., and San Antonio, Texas. For points one hundred miles north the dates should be ten days *earlier* in autumn, and about same length of time *later* in spring, for each one hundred miles. Allowance should also be made for difference in local conditions.

Artichoke, seed...February.

Artichoke, suckersNovember.

Asparagus, seed..February.

Asparagus, roots.March.

Beans, tender podsMarch to May.

Beans, limaApril to May.

January to April; July to No-

Beets vember.

ChardJanuary to April.

Brussels Sprouts.August to September.

BorecoleFebruary to March.

BeetsJanuary to April; July to November.

ChardJanuary to April.

Cabbage	July to September; January and February.
Cauliflower	April to September.
Celery	May and June; August and September.
Sugar Corn	February to June.
Cucumber	March to July.
Egg Plant	January.
Endive	March to May; September and October.
Garlic	October and November.
Kohl Rabi	January and February; July to October.
Lettuce	January to April; September to December.
Melon, both kinds.	March and April.
Okra	March and April.
Onion, seeds and sets	January and February.
Shallots, sets	November.
Parsley	November, February; June and July.
Parsnips and Carrots	January to March.
Peas, Tom Thumb	August and September.
Peas, Marrowfat..	January and February.
Peppers	January.
Potatoes, Irish ...	January to March (Feb. 1 is best date).
Potatoes, sweet...	April and May.
Radish	The whole year.
Salsify	October.
Spinach	September and March.
Squash	March to June.

TomatoJanuary to March; May to
June.

TurnipsJanuary to March; July to Oc-
tober.

The author's personal experience in gardening in the South proves that the Sandwich Beds are admirably adapted to that region, for excellent crops were grown regardless of adobe, alkali, sand, or other unfavorable conditions.

Sandwich Beds are especially successful on strongly alkaline soils. In such cases first place a layer, three inches deep, of old corn stalks. On this build the regular Sandwich Beds. The alkali will not trouble at all.

The double muslin screens are just what is needed to protect tender, succulent plants in this land of sunshine. By use of this means of protection, the finest grades of celery, lettuce, spinach, radishes, etc., can be produced with certainty.

Other cultural directions are similar to those found in the body of the book.

STRAWBERRIES

This fine fruit is usually grown on large areas, but can be produced in abundance, and of the finest flavor, on very limited spaces.

The difference in flavor is very much in favor of the home grown article. This is particularly true where berries are necessarily picked before fully ripened, and shipped to distant markets.

For finest flavor and highest excellence, strawberries should be gathered when fully ripe, preferably in the cool of the morning, with a trace of dew upon them!

The Modified Sandwich Beds are exactly adapted to producing this delicious fruit in its greatest perfection. A space six by twelve feet will usually produce enough for a small family, both for dessert and jam, but a bed twice that size, six by twenty-four feet, will afford enough in addition for gifts to appreciative friends, and few articles give the supreme satisfaction that a dish of large, showy, delicious strawberries is capable of inspiring.

It may be that the owner of a small plot in the back-yard, while wishing to grow something nice, yet has not spare time to attempt many vegetables; to such strawberry growing, even on a very limited scale, certainly offers peculiar attractions, for after the beds are constructed and carefully planted, they need very little attention.

An occasional hoeing, and pulling of grass and weeds, will be about all that is needed.

The planting should be done in latitude of Columbus, Ohio, as early as April. In fact the plants should be set as soon as other "first planting" is done, though good success may be often secured by planting as late as May 10.

Spring planting is usually much more successful than fall planting, in this latitude.

In latitude of New Orleans, San Antonio, etc., planting may be done any time from November to February.

The beds should be six feet wide, and of any suitable length. In making up the compost, add another part of sand, that is, the compost may be as follows: One part rich soil, one part fine

stable manure—that from cow stables preferred—and two parts fine river sand.

First spade the ground, filling the trenches with fine manure as each line of spading advances, as described in Modified Sandwich Beds. Spread about three inches of compost, as above described, evenly over the beds, and make tolerably firm by tramping; rake smooth, and it is ready for planting.

When plants are received, remove all but three young, fresh leaves; dip the roots in “puddle,” which is a mixture of clay and water, about consistency of cream. Allow the roots to remain in puddle until planted; that is, do not drop them ahead of planter, for the roots will soon suffer, if exposed to drying air.

In planting, first make a hole about five inches in diameter, and three or four inches deep. In bottom of hole make, with the hand, a small conical mound, say three inches in diameter, and two inches high. Set the center of the plant directly over the center of the conical hill, spread the roots evenly and smoothly, in all directions, down the sides, and then, carefully draw fine compost over the roots, filling up the hole till the ground is level. To prevent soil covering the heart of the plant, gather the leaves in left hand, until planting is completed.

After filling in the soil, press down *very firmly*, placing toe of shoe on each side of plant, close up, and then pressing with full weight.

When planting is properly done, the plant will be a little below the level, and set so firmly that it

cannot be pulled out by drawing on a single leaf.

After setting, pour a quart of water over and closely around each plant, and then shade with muslin screens for three or four days. Water again when screens are removed.

In ordering plants be sure to get a few extra plants of each variety. These may be planted temporarily, and used later to fill vacancies.

Michael's Early, Bubach, Gandy, and Aroma are fine varieties, and give a long season of ripening.

If other varieties are substituted, be sure that at least two varieties, out of five, are staminate flowered. The pistillate varieties are among the best bearers, if they are properly pollenized by staminate varieties planted near by, otherwise they will not be productive.

Plants set in manner here described will cover the ground the first season, and bear abundantly the following spring. In the North a light protection of leaves, or stable litter, will protect them from winter kill. But the covering must not be very thick, or they will often blanch and rot. Put on barely enough cover to conceal the plants; a little less will be better. The mulch or covering need not be removed in spring.

For stimulating growth, use nitrate of soda, a pint to a bed twenty-four feet in length (six feet wide). Apply the finely pulverized crystals by hand, broadcast, by sifting *between* plants, being very careful to keep the nitrate off the foliage of the plants. This should be applied early in spring, and repeated two or three weeks later.

After fruit is all ripened, the bed can be made productive for second year, in the following manner:

With a sharp hoe cut off, close to the ground, all the plants on a strip eighteen inches wide, leaving alternate strips of plants of same width. These strips thus destroyed should be where the old plants stood, leaving young plants for next crop. Then with narrow hoe, thin the strips remaining, leaving a vigorous plant not nearer its neighbor than six inches. Then with a spading-fork loosen the soil between rows, and around plants. Water well, and a vigorous growth of young, healthy plants will soon cover the entire bed. If they become matted, it will pay to pull out the weaker plants, otherwise the berries will be smaller, and of poorer flavor.

Nitrate of soda may be used second season, applied in same manner as directed for first crop.

After two crops, the bed should be changed to new location, planting a new patch the second spring.

Or a new plantation may be made *every spring*, destroying the plants after first crop is gathered.

Treated in this manner, 100 plants should produce from two to three bushels or more of highest grade of delicious fruit. Between time of blossoming and ripening of fruit, they should be watered at least every other evening, rather copiously, reducing the quantity of water as ripening approaches.

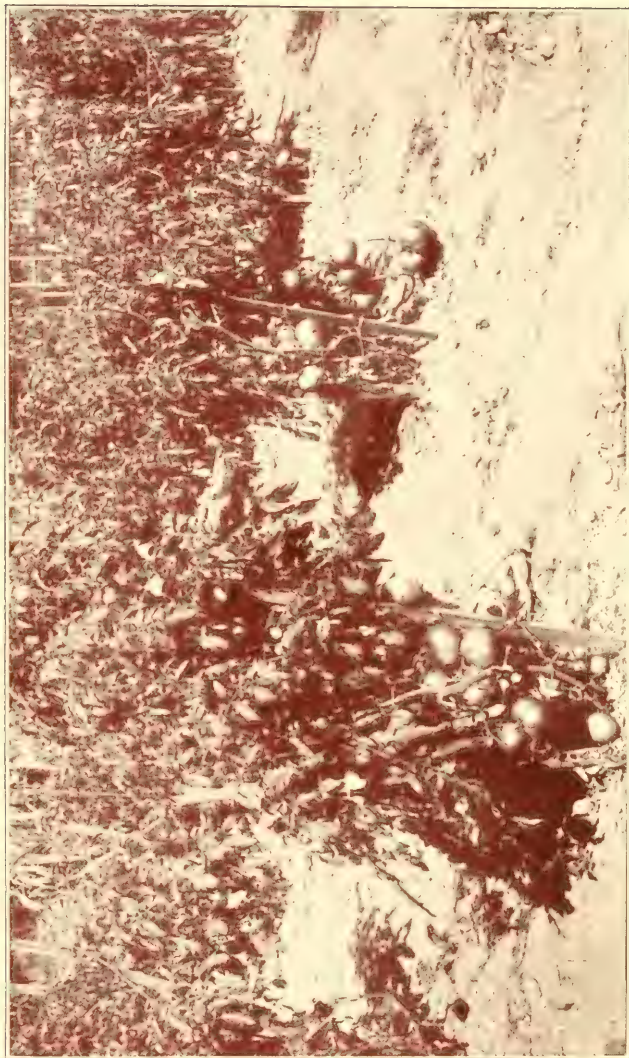
On alkaline soils, or on adobe, it is better to use the regular Sandwich Bed, for on these beds,



FIELD'S EARLY JUNE TOMATOES.



STAKED TOMATOES.



LIVINGSTON'S GLOBE TOMATOES. WILLOW BROOK FARM.

properly constructed, good crops can be grown, even where ordinary methods fail.

Plants may be set in rows, eighteen inches apart, beginning nine inches from the side, thus planting four rows on a bed six feet wide. In rows, twelve inches apart.

A bed six by twenty-four feet will require ninety-six plants. Better order 125.

When plants arrive they should be planted without delay. This is important.

The estimated yield here given is very conservative. The author has been able to grow more than double this quantity.

GENERAL REFERENCE TABLE FOR SOWING, ETC.

NAME	DATE OF SOWING		DAYS TO COME UP	DISTANCE TABLE		HOW DEEP TO COVER	QUANTITY OF SEED
	UNDER GLASS	OPEN GROUND		APART IN ROWS	ROWS APART		
Asparagus, Roots	April	.....	1 foot	2 feet	6 inches	100 for 100 foot row.
Beans, Dwarf	May to Aug.	6-10	3 inches	2 feet	2 inches	1 qt. for 100 ft. row.
Beans, Pole and Lima	May-June	6-10	3 feet	4 feet	2 inches	1 qt. for 100 ft. hills.
Beets	March	7-10	4 inches	1 foot	2 inches	2 oz. for 100 ft. hills.
Cabbage, Early	February	6-10	1 foot	1 foot	2 inches	2 oz. for 100 ft. row.
Cabbage, Late	May & June	6-10	1 foot	1 foot	2 inches	2 oz. for 100 ft. row.
Carrots, Early	April	10-15	4 inches	1 foot	2 inches	1 oz. for 100 ft. row.
Carrots, Late	May-June	10-15	5 inches	1 foot	2 inches	1 oz. for 100 ft. row.
Cauliflower, Early	April	6-10	1 foot	1 foot	2 inches	1 oz. for 100 ft. row.
Cauliflower, Late	May, June	6-10	1 foot	1 foot	2 inches	1 oz. for 100 ft. row.
Celery, Seed	April	12-20	3 inches	3 inches	2 inches	2 oz. for 100 ft. row.
Celery, Plants	May, June	.....	5 inches	5 inches	2 inches	2 oz. for 100 ft. row.
Corn, Sugar	May, July	8-10	2 inches	2 feet	2 inches	1 pt. for 100 ft. row.
Cucumber	May, July	6-8	4 feet	4 feet	2 inches	1 oz. for 60 hills.
Egg Plant	March	10-14	2 inches	3 inches	2 inches	1 oz. for 100 foot row.
Endive	February	6-10	1 foot	1 foot	2 inches	1 oz. for 100 ft. row.
Kohl Rabi	April, July	6-8	8 inches	1 foot	2 inches	1 oz. for 100 ft. row.
Lettuce	February	6-10	3 inches	1 foot	2 inches	1 oz. for 100 ft. row.
Melon	May, June	6-10	5 feet	5 feet	2 inches	1 oz. for 60 hills.
Melon, Water	May, June	8-12	8 feet	8 feet	2 inches	1 oz. for 30 hills.
Okra	May	6-10	2 feet	2 feet	2 inches	1 oz. for 100 ft. row.
Onion, Seed	April, May	.....	2 inches	1 foot	2 inches	1 oz. for 100 ft. row.
Onion, Sets	April, May	.....	2 inches	1 foot	2 inches	4 qts. for 100 ft. row.
Parsnips	April	12-18	4 inches	1 foot	2 inches	4 oz. for 100 ft. row.
Parsley	April, May	18-24	4 inches	1 foot	2 inches	1 oz. for 100 ft. row.
Peas, Wrinkled	April, July	5-10	2 inches	1 foot	2 inches	1 qt. for 100 ft. row.
Peas, Smooth	April, August	5-10	2 inches	1 foot	2 inches	1 qt. for 100 ft. row.
Pepper	March	10-14	2 feet	2 feet	2 inches	1 oz. for 100 ft. row.
Potatoes	April, June	10-25	1 foot	1 foot	2 inches	1 peck to 100 ft. of row.
Pumpkins	May, June	6-10	6 feet	6 feet	2 inches	1 oz. for 25 hills.
Radish	April, Sept.	4-6	3 inches	1 foot	2 inches	1 oz. for 100 ft. of row.
Salsify	April, May	6-12	3 inches	1 foot	2 inches	1 oz. for 100 ft. of row.
Spinach	April, Sept.	6-12	3 inches	1 foot	2 inches	1 oz. for 100 ft. of row.
Squash	May, June	6-10	5 feet	5 feet	2 inches	1 oz. for 40 hills.
Tomato, Seeds	May, June	6-12	2 inches	3 inches	2 inches	1/16 oz. for 100 hills.
Tomato, Staked Plants	May, June	.....	2 feet	2 feet	2 inches	.....
Turnip	April, Sept.	4-8	6 inches	1 foot	2 inches	1 oz. for 100 ft. of row.

PART II
FLOWER GARDENING

THE FLOWER GARDEN

THE use of the Sandwich Beds for growing flowering plants was an afterthought with the author. Experiments with a few varieties at first showed such marvelous results that the list was largely extended, and it was found that excellent success could be achieved with nearly everything tried. Indeed, these experiments were attended with such uniform success that it has been thought desirable to have a Flower Department prepared for the use of the amateur, or for those who have limited areas to cultivate, and yet wish to enjoy the beauty and fragrance of home-grown flowers.

No one need be deterred from attempting to grow flowers successfully because of limited space, or because of unfavorable conditions, for there is such a wide range for selection, that it would seem as if plants may be chosen that are suited to thrive in almost any condition of soil, exposure, etc. Of course many varieties require plenty of sunshine, but there are others which do equally well when shaded. Some varieties need plenty of room, and do best when isolated, or as single specimens. Others thrive when somewhat crowded. So there is ample opportunity to choose those adapted to varied conditions.

No specific plans can be given, as each location has its own peculiar conditions of surroundings, extent, and exposure. In planning for planting,

the open space should be in the center. Screens may be arranged along boundaries or buildings. In these screens, the tall-growing plants should be in the rear: medium sized next, and dwarf varieties in front.

In angles and corners, groups may be arranged, and in the open spaces, a few—not many—single specimens of tropical growth may be planted with good effect. Avoid, in planning, if possible, all purely geometrical effects. Rather imitate nature. The best designs are those where all appearance of design is concealed. Unsightly objects, sheds, fences, rocks, walls, etc., may be concealed by the use of clinging or festooning vines, or by suitable shrubbery. Vines do not appear at their best when planted in the open, even if supported by stakes or posts. Their proper place is against walls, or fences, or over verandas where they can spread broadly. Clinging vines such as Boston ivy (*Ampelopsis veitchii*) may only be trained over stone or brick walls. On wood they are damaging. Flowering plants or vines set near buildings require frequent waterings, as they are deprived of a large part of the natural rainfall. Nooks and shady corners are suitable for ferns, pansies, lilies of the valley, tuberous-rooted begonias, and violets. These do best in partial shade. For massed beds, some varieties seem best in single colors, such as geraniums and salvias. Other flowers are fine in mixed colors, such as asters, zinnias, verbenas, pansies, and poppies.

While roses are universal favorites, the grower must be prepared to fight scale, mildew, beetles,



FLOWER GARDEN, HOME OF THE GARDENETTE, WILLOW BROOK FARM.



NASTURTIUMS.



HOME OF THE GARDENETTE.

slugs, and aphids. All these are readily controlled if prompt attention is given. Otherwise the plants will soon become diseased and unsightly. However, the satisfaction of having an abundance of these most beautiful and fragrant flowers, continuously through the whole season, will amply repay the trouble and care necessary for success. It might be well to consider this in planting, and see that roses are set in accessible spots on account of dusting, spraying and other care.

For shade, or for screen porches, or verandas, plant clematis, large and small flowering, ipomea, Dutchman's pipe, climbing roses, and honeysuckles. They are usually quick-growing, and hardy, and usually free from disease and insects.

For rich, damp soils, try the eulalias, gracilima, zebrina, and variegata. They show best in single clumps, and require considerable room.

For ease of culture, and great profusion of bloom, for cut flowers, plant hardy perennials. Once established, they flourish year after year with very little care or attention. In this class are dicentras, hardy phlox, shasta daisy, golden glow, hardy perennial poppies, iris, peonies, and columbine. For early spring blooming, hardy bulbs, that are planted in October, such as tulips, hyacinths, crocus, and daffodils, are indispensable. But in the spring, these beds should be planted, in between the rows of bulbs, with gladiolus, tuberose, verbenas, petunias, asters, and zinnias, for succession and for blooms to cover the beds after the winter bulbs have died down. For flowering shrubs plant spirea von Houtii, wigelea, white or red, hydrangea arborescence, which is far su-

perior to the old hydrangea paniculata. These are hardy, and always graceful in form and beautiful in foliage.

For hedges, American arbor vitæ is especially fine. It is hardy, free from insects or disease, grows easily in almost all conditions, even in partial shade. Smoke, dust, and exposure to winds do not seem to injure it in any way. It can be sheared and kept in shape, and its dense foliage, being evergreen, is admirably adapted to locations where screens or windbreaks are needed.

California privet (*Ligustrum ovalifolium*) is also a very popular hedge plant, but it will hardly withstand very low temperatures. Fifteen degrees below zero has been known to kill entire hedges. In the latitude of Tennessee and southward it should be perfectly hardy. Age gives it additional hardiness, but north of the Ohio River it is liable to be destroyed, if temperature runs too low.

Rose hedges are beautiful, but require considerable attention. The roses used for this purpose are the climbing sorts, and such as American Pillar, pink, Dorothy Perkins, white, and Hiawatha, scarlet, are usually chosen. These are trained on a wire fence about two feet high, by interweaving, and then kept in shape by trimming. The results are found satisfactory.

Spring planting is best for hedges. The ground should be deeply trenched and made rich by the addition of well-rotted manure mixed with sand or street scrapings or compost. A heavy mulch of coarse manure, leaves and litter placed closely about the roots will help. Do not expose

the roots of the arbor vitæ to the sun and drying winds, for the resinous roots are easily killed by too much exposure to the air. Observe the same care with the roses, and after setting, cut them back to about eight inches. All need frequent watering until growth begins.

For edging use Madame Saleroi geranium, coleus, alternanthera, ageratum, aerva sanguina (blood leaf), or sweet alyssum, Little Gem. Coleus may need clipping, which only adds to its great beauty.

For the center of circular beds of tall-growing plants, try *Ricinus Zanzibariensis*, the largest and most beautiful of the castor beans. For the center of lower-growing plants the tall-growing cannas are satisfactory. For single specimens, standing alone, caladium is very effective.

In the pages following, cultural directions are given for the management of a large number of plants. From these, and others, selections may be made to suit a great variety of conditions. The amateur, however, should avoid attempting too great a variety at first, remembering that overcrowding often hinders success.

SOILS AND PREPARATION

It is obvious that in the average backyard of a city lot, there can be no choice of soils or other conditions. It is simply a case of "that or none." Fortunately, selections of plants may be made to suit almost any conditions. The soil, however, should be well drained, and rich. The "Modified Sandwich Bed" will be found very satisfactory. For single specimens, where giant growth is de-

sired, the Post Hole hills will be found effective. Where practicable, the genuine Sandwich Beds will always give excellent results, even if constructed on poor, stony or clayey soils, where success by other methods seems hopeless. This is equally true on adobe, alkali, or sand. Where strong alkali exists, first place a layer of corn-fodder three inches deep. On top of this, construct the regular Sandwich Bed, and it will succeed.

CULTURAL DIRECTIONS

Ageratum. Annual. Height, five to twelve inches. Colors, white and blue. Grown from seed. Used for cut flowers, edging, and massing in beds. Can be easily transplanted.

Sow in rich soil as soon as danger of frost is over, and press soil down firm over the seed. Thin out, or transplant to eight inches apart.

Sweet Alyssum. Annual. Height, six to eight inches. Color, white. Grown from seed. Very fragrant. Easily transplanted. Used for cut flowers and edging.

Sow in rich soil after danger of frost is over.

Asters. Annual. Height, twelve to thirty inches or more. Colors, all shades. Grown from seed. Used for massing, and for cut flowers. Is easily transplanted. Insect enemies, the blister beetle. Spray before and after their arrival with strong hellebore tea, or with slug shot.

Sow seed in shallow boxes in rich soil. A sunny window, in a room not too warm, is better than greenhouse conditions. The first sowings may be made in February, if very early blooms are



PLAN OF FLOWER GARDEN. SUNDIAL IN CENTER.

HYDRANGEA ARBORESCENCE GRANDIFLORA.
"HILLS OF SNOW."



FLOWERS ON SANDWICH BEDS.

wanted. Sowings may be continued at intervals till June—the later ones in the open ground. This will give a fine succession of flowers during the entire season.

When the seedlings have attained a third leaf, they may be transplanted into other similar boxes, lifting the small plants with a sharpened splinter. This gives the plants more room, and checks the tendency to “damp off” when the young plants are crowded in the first seed bed. It also insures more stocky and robust plants. If set three inches apart, each way, they may be held until suitable weather permits planting in the open ground. For constant blooms, plantings should be made at intervals of three weeks. Later plantings may be made in a seed bed in the open ground, about May 10, or a little later. The soil must be rich and mellow. The little seedlings should be shaded by muslin screens, supported on stakes about twelve inches high.

The genuine Sandwich Beds are ideal for asters. If these are not practicable, then try the Modified Sandwich Bed. If a layer of sandy compost be placed on top of the bed, and made firm and smooth, the plants will thrive and bloom in a way that will be very gratifying.

The small Tom Thumb varieties are set six inches apart. Medium sizes ten inches, and large growing varieties twelve inches apart. A mulch of fine manure will be found beneficial.

Semple's Branching are sure to give satisfaction. The blooms have long stems, which make them ideal for cut flowers. For late blooms, it is unsurpassed. For early blooms, try Queen of the

Market. For variety, and different colors, try fine mixed seed, offered by any reliable seedsman.

Tall growing varieties will be benefited by giving them support by the use of stakes, to which all or part of the plant may be tied. This will prevent dragging, in wet, windy weather.

Aquilegia (*Columbine*). Hardy perennial. Height, two to three feet. Grown from seed. Long stems suitable for cut flowers. Plant for borders, and around rock work. Easily transplanted.

Sow seeds in rich soil, out of doors, after danger of frost is over. Thin as it becomes necessary. When the plants are large enough, transplant to permanent bed. Suitable for shady places. There are many new and desirable varieties of recent introduction.

Achillea. Hardy perennial. Height, one to two feet. Grown from seed. Suitable for cut flowers. Has long stems. Flowers double, pure white. Easily transplanted. Does well in masses or for borders. Sow seed and manage same as columbine.

Anemone. Hardy perennial. Height, one to three feet. Many colors. Grown from seed. Easily transplanted. Suitable for masses, borders, and shady places. Sow seed and manage same as columbine.

Balsams. Tender annual. Height, ten to thirty inches. Many colors. Grown from seed. Easily transplanted. Sow seed in rich soil as soon as frosts are over, and transplant to permanent beds, setting plants fifteen inches apart. Great improvement has been made in this old-

fashioned flower in the last few years. *Camelia Flowered*, and *New Goliah* are types of the highest development.

Begonia. Tender perennial. Begonias are divided into two classes—fibrous rooted, and tuberous rooted. The fibrous rooted are mainly grown for their foliage, the tuberous rooted for their very handsome single and double flowers. Height, one foot. Many colors. Suitable for shady places, but must have very rich soil.

Canna Indica (*Indian Shot*). Annual. Height, thirty inches to eight feet. Flowers, many colors. Foliage, green or bronze. Grown from seed or divided clumps or roots. The latter is more satisfactory. If seeds are sown, first pierce the shell in at least one place, then soak in warm water until they show evidence of swelling; then sow in sandy loam. When second leaf is formed, pot off singly, and keep in a warm, sunny window until warm weather is assured. When divided roots are used, start in sandy soil in boxes in March, and keep them in a warm place.

For single specimens, use the tall growing varieties, such as *Louisiana*, or *Wyoming*, which have green foliage, or *King Humbert*, or *New York*, which have bronze or purple foliage. All have magnificent blooms.

The soil must be very rich, and somewhat sandy. Post hole hills produce extra fine specimens, if given frequent waterings. For bedding, it is customary to arrange one tall-growing plant in the center: next plant six cannas in a circle, eighteen inches apart. For each succeeding circle it will require six more plants than were used

on the next preceding circle. Each circle should be of one variety, and not quite so tall as the one next within. The dwarf varieties should be used in the outside circle. Small beds may be all of the same variety. A row of the tall-growing cannas forms a beautiful background or screen. This plant is not subject to attacks of fungi, insects, or diseases. The conditions necessary for success with cannas, are a very rich soil, and plenty of water and sunshine.

Late in autumn, about the time of the first light frosts, cut off the stems, leaving eight or ten inches. Dig up the clumps, allowing some of the dirt to adhere to the roots, and store them in a cool, dry cellar where it does not freeze. Pack the clumps closely, and sift over them and between the clumps, sand or compost. Water very sparingly once a month.

In early spring, say about the first of March, divide the clumps to one or two eyes, and plant pretty closely, in boxes, and set them in a warm sunny place. The boxes should not be too large, or they will be hard to handle. Keep the soil damp, but not wet. The new growth should be one or two feet high at the proper season for planting out in the open.

Caladium. This is a bulbous plant, but is placed here for the reason that it is usually grown out-of-doors as a single specimen for its showy tropical foliage. It is sometimes planted, for the same reason, near streams or ponds. It is grown from bulbs, usually procured from florists, and the bulbs should be two or more inches in diameter. Bulbs three inches in diameter will produce

good specimens. Plant in very rich soil on Post Hole Hills, and water regularly. Take up the bulbs before frosts in autumn, dry off, and pack in dry sand, and keep on a shelf in a warm, dry room. Do not plant out-of-doors until cold or frosty weather is past. The bulbs need not be "started."

Chrysanthemums. Perennial. Height, one to three feet. Colors in variety, but white, yellow and pink predominate. The original type was yellow, hence its name, which means, "golden flowers." It is especially desirable for cut flowers, and for potting, for late indoor blooming. It is usually grown from rooted cuttings, but may be grown from seed. The former method will be found most satisfactory.

Procure plants from a florist, in March, and plant singly in six-inch pots or small, wooden boxes, and after liberal watering, set in a sunny, but moderately cool place. While chrysanthemums are indoors, they are subject to attacks of Aphis. For these, syringe with strong tobacco tea. About the middle of May, "plunge" the pots in soil in beds in the garden. "Plunging" is setting the pot in the soil so that the top of it is level with the ground. Chrysanthemums make slow growth at first, but should be watered regularly, and to prevent the formation of roots *outside* the pot, it is necessary to give the pot, plant and all, an occasional turn, without lifting it out of the ground. Do this once in three weeks. If this is neglected, the roots will penetrate the soil through the drainage hole, and the plants will wither when taken up in the fall. The object is

to confine all the roots to the soil *inside* the pot.

After the plants have begun to grow vigorously, they must be watered very frequently, but in moderation.

When the plants are a foot high, the terminal bud should be pinched out. This at once stops upward growth, and starts side branches. These in turn should be topped in the same manner. Continue this topping until the middle of August, but not later. At the same time, trim out the slender shoots, and trim the plant so as to bring it to a symmetrical shape.

When frosts are due, remove the plant, pot and all, to a cool sunny room. Water moderately. Watch the foliage for Aphis. If above directions are carefully followed, there will be an abundance of fine blooms which will continue for many weeks.

For varieties, consult florists' catalogs. There is a wide range to select from, and all tastes can be suited.

Cosmos. Annual. Height three to six feet. Variety of colors. Used for cut flowers in late summer and autumn. It is grown from seed. For early planting, sow in shallow boxes, and transplant when danger of frost is over. For later planting, sow seed in the open ground, and transplant where wanted. They will continue blooming even after light frosts. Set plants twelve to eighteen inches apart.

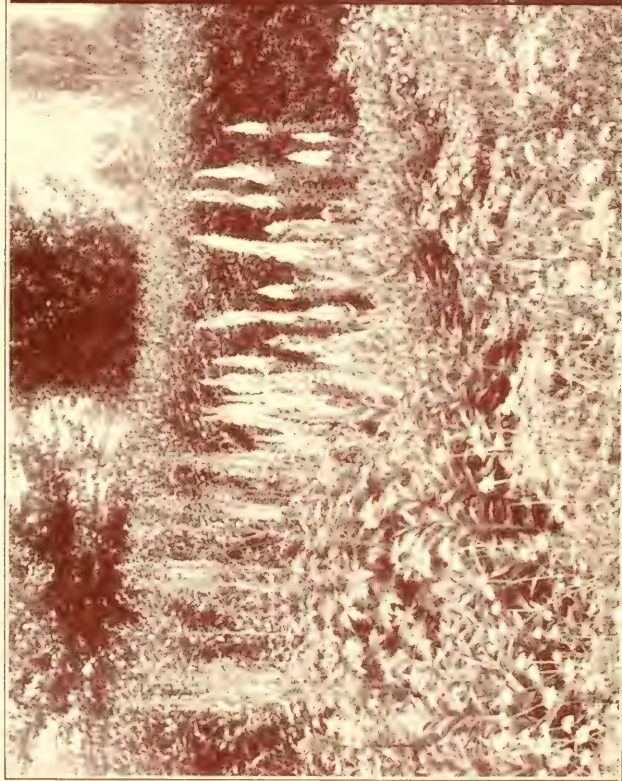
Clematis. Hardy perennial, climber. Height twelve to twenty feet. Colors, Jackmanii, violet purple. Henrii, snow white. Madam Edouard Andre, bright crimson. These are all large flow-



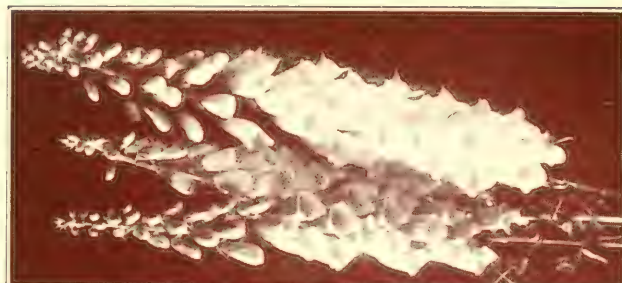
CLEMATIS PANICULATA.



TWIN LILIES.



FLOWERS IN SHADY CORNER.



FOXGLOVE.

ered. *Paniculata* has small, star shaped, white flowers, in greatest profusion. These vines are used to shade and screen verandas, for which purpose they are well adapted, but they must be allowed to climb on wire netting.

All varieties may be grown from seed, but to save time, it is usual to purchase two-year-old plants. The *Jackmanii* class have thick fleshy roots, and must be handled with greatest care to insure success. The best location is on the north side of a building, where the soil is somewhat moist. Make a small, conical mound in the bottom of the hole, when planting, and place the plant on the apex of the mound, allowing the roots to slope in all directions, down the side of the mound. Fill with sandy soil and compost, and water moderately but frequently. The *Paniculata* has fibrous roots, and can be planted just as any other hardy perennial. Two-thirds of the vines should be cut away in November. All varieties are perfectly hardy.

Cypress Vine. Annual, climber. Height ten to fifteen feet. Colors, white and scarlet. Used for shading porches, or trained on trellises for screens. Grown from seed. Seed should be soaked over night in luke warm water, and planted in the open ground when danger of frost is over. Transplant when large enough. For screens, set five or six inches apart. The soil should be rich. Wire netting makes a fine support, but cypress vine will readily climb a single stake, or a string. The fern-like foliage is very attractive.

Centaurea (Dusty Miller). Perennial. Height twelve to eighteen inches. Grown for its silvery

foliage. Used in hanging baskets, vases, rockeries, and shady places. Grown from seed, and transplants easily. There are several varieties; the *Gymnocarpa* is the foliage plant.

Cinnamon Vine. Hardy perennial, climber. The roots remain in the ground for years, but the tops die down to the ground at the end of every season. Height twelve to twenty-five feet. Flowers small, white, and very fragrant. It is used for screening and shading verandas, or trained on wire trellises for screens. It is grown from plants, which may be procured from florists. Buy only two-year-old plants, and set in early spring. This plant is free from disease, or attacks of insects.

Dahlia. Tuberous, annual. Height two to six feet. Colors in great variety. Used for borders, and for cut flowers. Can be grown from seed, when they will, if started early enough, bloom the first season. Great variety of flowers occurs when grown from seed. They are best when grown from tubers. They may be also propagated by rooted cuttings. Seeds are sown in flats, early in the spring, and transplanted to the open ground when settled warm weather is assured.

Tubers should be started early, in boxes of sandy soil, laying the tubers over on their side, and covering three inches deep. They require a warm, sunny place, otherwise they will be slow in starting.

If a number of shoots start from the same tuber, rub off all but the sturdiest one. When this is six inches high, cut it off above the second joint. This will cause the plant to throw out four

side branches, and assure a stocky and symmetrical plant.

Transplant in very rich beds, when warm, settled weather is assured, giving light and frequent waterings until they get well started. Dahlias must not be planted too close together. Three feet each way is about the right distance. Rank growing varieties should be supported by tying them to *strong* stakes, driven firmly into the ground. Pretty severe thinning of the weaker branches will help the plant to stand erect. The conditions for complete success are rich soil, and plenty of sunshine. In autumn, before hard freezes set in, cut off the stalks, leaving stubs six or eight inches long. Dig the tubers carefully, and pack in boxes in dry sand, and store in a frost proof cellar. They should not be allowed to get too dry, but must not be kept excessively wet. An occasional light sprinkling will answer.

Digitalis (*Foxglove*). Hardy perennial. Height three to four feet. Various colors. Seeds should be sown out-of-doors as soon as the ground is in good condition. Easily transplanted. Do not crowd them. They succeed well among shrubbery, or in masses. Used for cut flowers. When the center spikes begin to fade they should be cut out, and the side shoots will grow more vigorously, and keep up a profusion of flowers for a long time.

Delphinium (*Larkspur*). Annual and perennial. Height one to four feet. Used for massing, borders, or among shrubbery. Fine for cut flowers. Great variety of colors. Easily cultivated, and adapted to many conditions. Seed may be

sown in the spring or fall,—preferably the latter. Thin plants to eight or ten inches for annuals, and two to three feet for perennials. All varieties have clean, attractive foliage, and the blooms are dazzling.

Dianthus (*Pinks*). Two classes, annuals and perennials. Both are hardy. The annuals often give very fine blooms the second year, and the perennials often bloom profusely the first year. Both are rapid growers. Height twelve to fifteen inches. All colors. Used for massing, and for cut flowers. The perennial is sometimes called “Clove or Spice Pinks.” Both are grown from seed sown in the open ground, where they are to remain. Thin and transplant for an even stand. These low growing plants are so easy to grow and are so very satisfactory that they deserve a place in every flower garden.

Ferns. Hardy perennials. Height eight inches to two feet. They are planted solely for their foliage. They are grown best from plants, which can be procured from florists. They are best adapted to damp, shady nooks, or corners, especially on the north sides of buildings. They require a soil rich in humus—decaying vegetable matter—and need to be watered often. Hardy ferns need little or no protection, though a light covering with leaves in late autumn will be a benefit. The tender class or “parlor ferns” are not suitable for out-door planting.

In many localities beautiful native ferns may be found. They are easily transplanted in early spring, and are very well adapted to ornamental planting.

Geraniums. Tender perennial. Height eight to twenty-four inches. Variety of colors. This is a greenhouse or parlor plant, and is only considered here because of its value as a bedding plant, for masses of color, borders, and edging. These can be grown from seeds, but are more satisfactory when grown from rooted cuttings. For bedding, use bright colors, such as General Grant, orange-scarlet, single, and S. A. Nutt, brilliant crimson-scarlet, double. These are especially good for bedding, and are a type of the best class for bedding purposes. For edging, try Madame Saleroi; bright green leaves edged with white, and of dwarf habit.

Gladiolus. Tender bulbs. Height two to three feet or even more. A great variety of colors. Used for cut flowers. Generally grown from mature bulbs. It requires a year for bulblets, size of a pea, to reach blooming size.

Fine bulbs of blooming size can be obtained from florists and seedsmen. Plant the bulbs six inches apart, and four inches deep. Planting should begin about the middle of April, and be continued at intervals till the first of June. This will give constant bloom till frost. If planted too shallow, they are apt to break down. This may be avoided by tying each stalk to a light stake *before* the break-down occurs. Deep planting helps.

Great improvement in varieties has been made in the last few years. For varieties try America, pink, Augusta, white, Canary Bird, yellow, Princeps, scarlet. Gladioli do especially fine on the Modified Sandwich Beds. The name of this

beautiful flower is often mispronounced: notice that the accent is on the *second* syllable and not on the *third*.

Hydrangea. Hardy perennial shrub. Height four to eight feet. Color, white. Blooms practically all summer. Used as single specimens, or for back-ground. Hydrangeas are of two kinds, hardy and tender. Only the hardy are considered here. Procure strong stocky bushes from a florist or nurseryman. There are several varieties, but the new *Arborescence* or "Hills of Snow" is so far ahead of the old *Paniculata Grandiflora*, that it is the only one I should recommend. These are very easy to grow, and immensely satisfactory.

Honeysuckle. Hardy perennial, trailing vine. Height six to twelve feet. Various colors. Used for trellises, pillars, walls and rockwork. Grown from rooted plants. Used for cut flowers. Some of the honeysuckles are nearly evergreen. They are free from insects or disease. They grow easily almost anywhere. Evergreen sweet-scented is a very desirable variety, bearing flowers both yellow and white.

Iris. Hardy perennial. This is a bulbous or tuberous plant. Height one to two feet. Great variety of colors. Used for planting in borders. Fine for cut flowers. Usually grown from bulbs procured from a florist. Easily grown and seems to improve from year to year. The dwarf purple, and the dwarf white, are diminutive in size, being six to eight inches high, and are sometimes used for edging.

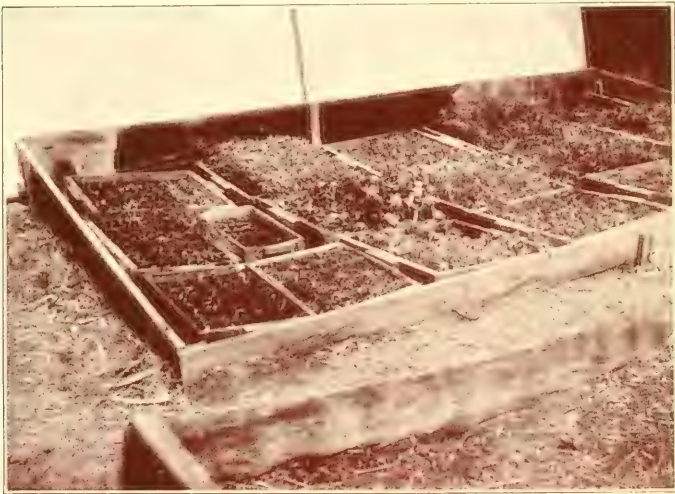
Kochia. Annual. Height twenty-four to thirty inches. Foliage, light green, changing to car-



TYPES OF GLADIOLI.



FLOWERS IN VARIETY.



EARLY PLANTS IN COLD FRAME.

mine or blood red. The plants are of pleasing globe or oval shape, and very symmetrical. Flowers inconspicuous. This plant is grown for its foliage, single specimens, or in hedgerows. The beauty of the plant is its shape and color. Grown from seed, and easily transplanted. Seed may be sown in boxes for early planting. They may be also sown in the open ground after danger of frost is past, and then transplanted where they are to grow.

Liliums. Hardy bulbs. There are many varieties but only the hardy ones for out-door planting are considered here. The following will be satisfactory. Auratum (Gold Band Lily of Japan), Longifolium (White Garden Lily), Speciosum Album, white; Speciosum Rubrum, red; Speciosum Melpomene, crimson: Speciosum Magnificum, rich red, spotted. Most of the lily bulbs are imported, and do not usually arrive until late, sometimes not until November. They should be planted as soon as they are received. Packed in sand they may be kept until spring, and then planted, as soon as the frost is out of the ground, that is, if they are received too late for fall planting. The soil should be rich, and deep. Set the bulbs six inches deep, and surround each bulb with pure sand. Once planted, they remain in the ground and will bloom for years without replanting. In the fall, mulch slightly with coarse manure.

Lily of the Valley. Hardy perennial. Sweet, delicate and graceful. Height six to eight inches. Color white. Used for cut flowers in bouquets. Grown from pips or bulblets. Plant in rich soil

in partial shade. Plant in early spring, six inches apart each way. They soon form a dense mat and flourish with little care from year to year.

Mignonette. Annual. Height one to two feet. Various colors. Used for cut flowers because of its rich fragrance. Grown from seed. Sow in good soil where they are to stand, in April, and at intervals till June for a succession. Thin to six inches apart and pinch out the top when the plant is two inches high. This will insure sturdy plants and an abundance of fine blooms.

Nasturtiums. Annual. Dwarf and climbing varieties. Height of dwarf, twelve to twenty-four inches. Climbing sorts reach a height of six to eight feet. Colors in variety. Used for massing, rock work, and also for cut flowers for table decoration. They are grown from seed. Can be transplanted. For early, sow seed in a shallow box, cover one-half inch deep, and press soil down firmly, water, and set in warm, sunny place. Transplant in the open ground when settled warm weather is assured. This treatment is suited to both the dwarf and climbing kinds. They do best in soil only moderately rich. Sow in the open ground in May.

Peonies. Hardy perennial. Height two to three feet. Colors, white, pink, and crimson, with all intervening shades. Used for massing or single specimens. Fine for cut flowers. Grown from roots. They are best planted in autumn, but sometimes succeed if planted in the spring. In general practice the root-clumps are divided too small. The divisions are best if grown in nursery rows one or two years and then planted

without further division. They require deep rich soil for best success, though they will grow anywhere except on very wet soils. They must have plenty of room. Three or four feet apart is close enough. Do not plant too deep. They often bloom the first season after planting, but improve greatly each succeeding year. They are not troubled with diseases or insect pests.

Pansy. Hardy biennial. Height six inches. All colors. Used in massing and for edging. Grown from seed. Sow in shallow boxes in rich soil very early in the spring. Thin to two inches apart in the box, and transplant to the open ground about the first of May or even earlier. For early flowering, plants grown in cold frames from seed sown in the fall, are best. These can be procured from florists. They do best in rich, moist soil, in partial shade, but do not thrive under trees. With slight protection they will winter over but young vigorous plants give the finest blooms.

Petunia. Annual. Height ten to twenty-four inches. Many colors. Useful in massing. Grown from seeds. They succeed as house plants and bloom freely in a sunny window. Sow seed in the open ground early in the spring. Thin and transplant when large enough. The flowers are single, double, ruffled, and striped, and the ease with which they can be grown makes them universal favorites.

Phlox (Drummondii). Annual. Height eight to twenty inches. Colors in great variety. Used for waste places, borders and massing. Fine for cut flowers. This is a native of Texas, and is of

very easy cultivation and is sure to be satisfactory. Seed may be sown in the open as early as the ground will do to work. Do not crowd them. Surplus plants may be easily transplanted.

Perennial phlox are grown from clumps, which are procured from florists. They are perfectly hardy, and, once established, will flourish and bloom from year to year. The soil should be rich. Occasional watering in dry weather will be an advantage. A light mulch of manure should be given late in autumn. Phlox are free from disease and insects. They are very easily grown, very profuse bloomers, through the entire season, and are indispensable in every garden.

Poppy. Annual. Height two feet. Variety of colors. Used in massing. Flowers are double and single. Grown from seeds sown where they are to remain, as they are hard to transplant. In thinning, do not pull up the plants, but pinch them off at the surface of the ground, as pulling disturbs the roots of those plants that are to remain. Two or three sowings will give a succession of flowers. Perennial poppies are hardy, and continue to thrive and bloom for some years without further trouble, after being once started. They are somewhat taller than most of the annual poppies, and the flowers can be used for cutting. Sow seed same as the annuals. They sometimes bloom the first season.

Roses. Perennial. Shrubs and climbers. Shrubs grow two to six feet high. Great variety of colors. Used for beds, masses, single specimens, and for hedges and screens. Roses are unsurpassed for cut flowers. Grown from rooted



PANSIES FROM THE GARDENETTE.



DOROTHY PERKINS CLIMBING ROSE.

cuttings. They are also budded, in which case the hardy wild varieties are used for stock. Many kinds are tender, and will not stand freezing, while others are quite hardy, even under trying conditions. Only the hardy and half-hardy sorts are considered here. In bush or shrub roses there are the Hardy Hybrid Perpetual, and the Half-hardy Hybrid Teas. Additional classification serves only to confuse the amateur. Hybrid Perpetuals are hardy under all ordinary circumstances. They are "perpetual" in the sense of continuing to bloom more or less constantly from June until frost. As a rule they are not as fragrant as the Teas or the Hybrid Teas.

Roses require a rich deep soil. Clay seems to suit them best. As roses are to remain permanently where they are first set, the soil should receive extra attention.

Plants grown from cuttings, that is, plants on their own roots, are preferred to budded stock, for even if winterkilled to the ground, the former will throw up strong shoots which will produce blooms of the same kind. Whereas, if budded stock is so injured, the shoots will likely be from wild stock, and the flowers will be disappointing. This is true of all classes of roses. It is therefore best to avoid all budded stock. To some degree this trouble in budded stock may be avoided by deep planting; also by hilling up with soil around the plants late in autumn. The hilling up with soil is very beneficial in many ways, and should never be neglected.

In early spring spray your roses thoroughly with standard lime-sulphur solution, diluted

twenty to one with cold water. Repeat after ten days. This is for San José and other scale. Soon after the leaves are out, give them thorough sprayings with strong hellebore tea. Two or three applications at intervals of a week will keep the green worm, which defoliates the plant, in subjection. Paris green, one part, to water twenty parts, will also be found efficient, but it is more dangerous. Mildew which shows a grayish-white film on the affected leaves, can be kept in check by frequent sprayings with Bordeaux Mixture diluted, one pint to six pints of water. Mildew is the worst enemy of the rose, and the hardest to combat. For Aphis, or plant lice, spray with strong tobacco tea.

In the class of Hybrid Tea Roses are found some of the most beautiful roses in existence. Besides their wonderful beauty, they are usually "ever-blooming," that is they bloom at short intervals throughout the season. For best success and perfection of flowers, the blooms should be cut when in bud, and seed pods should be removed as soon as formed. Encourage the growth of new wood, for only on these are the flowers formed. Cut back the branches that have ceased blooming.

Purchase two-year-old plants, those grown on their own roots preferred, and set two feet apart in beds that have been spaded deep, and well enriched. Prune rather severely, and mulch the entire bed heavily with coarse manure. The mulching is highly important. They will need considerable water, but the soil must not be made soggy.

In late autumn the bushes may be taken up and stored in moist sand in a box, in a cool cellar, and

replanted in the spring, after severe pruning. But they may be easily protected in the bed by first bending the stems so they will lie flat on the ground. Then place a layer of evergreen boughs on them, and on the boughs place inverted sods, being careful to cover the roots and all the stems. Remove the covering late in the spring, just as growth commences, being careful to uncover gradually.

A list of desirable varieties is here given, merely as a guide to the amateur.

TWELVE HYBRID PERPETUALS

American Beauty,	crimson
Paul Neyron,	clear pink, large
Ball of Snow,	pure white
Gen'l Jacqueminot,	crimson
Glorie Lyonnaise,	nearly yellow
Clio,	lovely flesh color
Marshall P. Wilder,	deep red
Ulrich Brunner,	crimson scarlet
Magna Charta,	bright pink
Frau Karl Druschki,	pure white
Mme. Chas. Wood,	cherry red
Hugh Dickson,	brilliant crimson

TWELVE HYBRID TEAS AND TEAS

All of these are the hardiest of their class.

Helen Gould,	crimson
Helena Gambier,	canary yellow
White Maman Cochet,	white
Jonkheer J. L. Mock,	carmine pink
Etoile De Lyon,	golden yellow
Maman Cochet,	coral pink

Kaiserin Augusta Vic-	
toria,	white
Mrs. A. R. Waddell,	coppery red
Ecarlate,	scarlet
LaFrance,	pink
Hermosa,	bright pink
Meteor,	bright crimson

Climbing roses should be chosen for hardiness. General management for climbers just the same as other roses. Not many of the hardy climbing roses are everbloomers. Most of them bloom but once in a season. The new Climbing American Beauty is said to be hardy, or at least half-hardy, and a constant bloomer. Climbing Baby Rambler is ever blooming, but nearly all of the everbloomers among climbers will be killed by severe winters. Among the June bloomers are such as Prairie Queen, Seven Sisters, Tennessee Belle, Baltimore Belle and Crimson Rambler and a few others that are truly hardy.

The Rugosa class has beautiful foliage, oddly wrinkled and is very ornamental. Some are single, others double; all very fragrant. These are of iron-clad hardiness.

The Wichuraiana class will climb if trained; otherwise they trail on the ground. Suitable for training over rocks, stumps and unsightly objects. Nearly Evergreen. They bloom in June and July, and are perfectly hardy.

Ricinus (*Castor Bean*). Annual. Height ten to fifteen feet. Grown for its foliage. Used as a center of groups of tall-growing plants. Grown from seeds, which should be started in pots in Feb-

ruary or March, and transplanted after danger of frosts is past, to place where they are to remain. For gigantic size, plant them on a post-hole hill, and give frequent watering. The author has grown specimens over fifteen feet high by these methods. The Zanzibariensis is by far the finest and best variety.

Salvia (*Flowering Sage*). Annual. Height two to three feet. Color, most vivid shades of red. There are also white and blue varieties, but the red is most used and admired. Used for massing, single specimens, and hedges. Grown from seed. Start the seed in a box in March, and transplant to the open ground when warm weather is assured.

Sweet Pea. Hardy annual. Vines grow to height of three to five feet. Colors in wonderful variety. Used for cut flowers. Very fragrant. Grown from seed. These are sown in a trench about four inches deep, very early in the spring, not later than February or March, the earlier the better. Cover at first about two inches, later draw in the soil until it is level. The usual mistake in sowing sweet peas is to get them too thick. Four inches apart is plenty close enough—five inches is better. Before planting, the trench should be spaded very deep and made rich with well rotted manure. The trench is best prepared in the fall. Do not plant sweet peas near buildings nor under trees. As soon as they are up, stake at once or give support with wire netting. Cut flowers freely, and keep seed pods pinched off.

Verbena. Half-hardy perennial. Height twelve inches. Procumbent. Variety of brilliant colors

and shades, of white, scarlet, red, crimson and purple. Used for massing. For this purpose, the scarlet is especially popular. Mixed colors are also favored. Most seedlings are fragrant. Grown from seed and also from cuttings or layers. Seedlings are most vigorous and satisfactory. Sow seeds in boxes in March and plant about twelve inches apart in the open ground about the first of May.

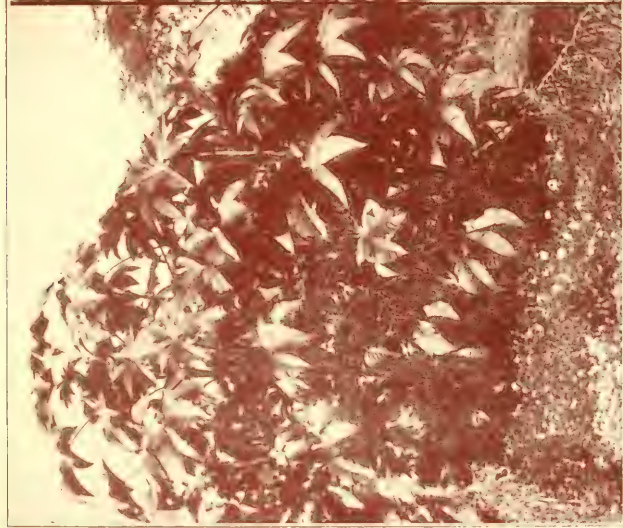
Zinnia. Annual. Height twelve to thirty inches. Great variety of colors. Used in masses, borders, and for cut flowers. Grown from seed, and easily transplanted. May be sown outside about May first, or for early, start in the house before that time. The soil need not be extra rich. Do not crowd the plants. Twelve inches or more each way, if choice flowers are wanted. They are so easily grown and so beautiful, that they deserve a place in every flower garden.

HARDY BULBS

Only hardy bulbs, suitable for planting out doors, are considered here. For caladiums, can-nas, lilies, and gladioli, see directions given in the general collection of plants.

Holland or Dutch gardeners are famous for their success in growing fine hyacinths, tulips, and similar bulbs. While climate and painstaking skill doubtless have much to do with their success, yet soil conditions appear, after all, to be the principal factors.

The ideal soil is light or sandy, well-drained, rich, and containing much humus or decaying vegetable matter. The Standard and Modified



RICINUS 15 FEET HIGH, WILLOW BROOK
FARM.



CANNAS AND DAHLIAS, SANDWICH
BEDS.



FRAGRANT FLOWERS.
LILY OF THE VALLEY.



HONEYSUCKLE.

Sandwich Beds, with slight modifications, will produce results of the most satisfactory character. Because of depth of planting, the top layer of the compost or street scrapings needs to be about seven inches deep. Make this very rich by the addition of manure. That from cow-stable is preferred, as it is non-heating. The compost should be prepared in early summer, and the materials in the heap should be thoroughly mixed by shoveling over several times. Remember that complete success depends upon having the soil *just right*. In using street scrapings, be sure to avoid streets that have been oiled, or that have asphalt or tar in their make-up.

Crocuses are used in masses, or "naturalized," that is, they may be placed at random about the lawn, or near shrubbery, and then be allowed to remain for several years. They are planted in September or October. In masses, plant them three inches apart and two inches below the surface. In lawns, make a small hole with a garden trowel. They will finish blooming before the lawns need mowing in the spring. Crocuses are the first flowers of the season.

Hyacinths. These should be planted six inches deep, and six to eight inches apart, in beds prepared as described above. They may be planted any time during September or October, or even later, in fact, any time before the ground is frozen. A sunny location is best. Sometimes when the bloom is heavy, the spikes blow over, or break down. This can be prevented by tying to light, strong stakes with a soft string. The colors run in shades of pink, blue, yellow, red

and white. The flowers are both double and single. The latter are usually the most satisfactory. They may be taken up after the plants die down, and be stored and replanted, but this scarcely pays. If left in the ground, they will bloom the second year, but the flowers may be inferior. After the second year, new bulbs should be procured. A light mulch of leaves, put over hyacinths in the fall, will be of advantage.

Tulips. Cultural directions as given for hyacinths will also apply to tulips, except that the bulbs should be set four inches apart, and four inches deep. They may remain undisturbed for two or three years, especially if the beds are prepared as described above. In purchasing bulbs, select a good grade, and buy of experienced, responsible dealers. Cheap bulbs are pretty sure to be disappointing.

Narcissus. Narcissus is the name of the species. Daffodils, jonquils, and Chinese sacred lily, are classes of narcissi. When narcissi are once planted they continue to grow and thrive for a number of years without renewing, but should be taken up and re-set, once in three years. Directions for planting are the same as for hyacinths, except that they are planted six inches apart, and three inches deep.

Paper white, polyanthus, and Chinese sacred lily are not hardy enough to plant out of doors, except in the extreme South. Poeticus is a small, white variety, that is sweet scented, and is often "naturalized." Jonquils are yellow, and are of iron-clad hardness.

Tuberose. Tuberose is a species of lily, and

are usually regarded as a greenhouse plant, but they may be grown very successfully out-of-doors. Their beauty and wonderful fragrance make them indispensable. They are grown from small bulblets, which are attached to the bulb, and which require to be grown in nursery beds one year before reaching blooming size. Select good sized bulbs, with well developed necks that are firm. If the necks are shrunk or spongy, they will not bloom. Plant the bulbs in five or six inch pots, setting so that the tops are covered one inch deep. Water sparingly, and keep them in a warm sunny place while they are forming roots. Pot a few at a time, at intervals of three weeks, beginning March first and continuing until June.

About the middle of May the pots should be "plunged" in a sunny place in the garden. Water frequently. Tall growing varieties will need support by staking.

When they begin to bloom, the plants, pot and all, may be lifted, placed in jardiniers and removed to the house. When they are through blooming, the bulbs may as well be thrown away, as they bloom but once. There are several varieties, but the Dwarf Double Pearl is mostly grown. Double and single sorts may be had if desired. One variety has variegated leaves, but as it is not a foliage plant, this does not add to its value.

THE WILD-FLOWER GARDEN

IN the city back-yard it sometimes happens that there are shady corners, or narrow strips of ground along boundaries or fences, especially on shaded sides of buildings, which may be devoted to the growing of wild or native flowers. The Modified Sandwich Bed is the ideal preparation for this purpose, using a compost rich in humus or decaying vegetable matter, such as leaves, lawn clippings, litter, etc. Partial shade is not detrimental, for most of the desirable plants will be found growing naturally in such conditions.

A friend who owns a beautiful home in the city has such a wild-flower collection, which she calls her "Souvenir Garden." It is a narrow strip of ground, scarcely three feet wide, and five or six yards long, on the north side of the house, bordered on one side by a walk, and on the other side by an iron division fence. It is mostly in the shade, except in the early morning, and during a part of the afternoon. In this bed is planted a varied assortment of native flowers, picked up at picnics, visits to the country, and in rambles over the hills, and along the river. Some were found when on excursions, far from home: some by the roadside—anywhere and everywhere that they were met with. Only choice specimens were taken, and only one or two of a kind. Sev-



FLOWERS AT HOME OF GARDENETTE.

NATIVE FLOWERS, HAREBELLS AND
WILD FERNS.



FORMAL PLAN OF FLOWER GARDEN.
BORDER OF ANNUALS.

eral years were occupied in completing the collection.

For a border, wild violets of several colors were used. No effort was made to follow any formal plan, but the plants were set promiscuously, as they were secured, and the result was most pleasing.

There were clumps of columbine, black-eyed Susan, wild phlox, hepatica (Wild Liverwort), anemone, blue bells, golden rod, buttercups, wild asters, blue and white, trilliums, jack-in-the-pulpit, bloodroot, Dutchman's breeches (Wild Dicentra), fringed gentian, lady's slipper, and many other beautiful plants and flowers.

A few clumps of lily-of-the-valley might be added, and if desired, a sprinkling of crocus bulbs and hardy tulips would give brightness.

These will give a constant succession of bloom. The plants named are nearly, if not all, perennial, and will re-seed themselves. They are accustomed to maintain themselves in the struggle for existence, in their natural condition, and can be depended upon to look out for themselves, even when cultivated.

A light mulch of leaves should be maintained, and grass and weeds should not be permitted to grow.

By proper care, plants may be successfully moved at any season. As many of these plants can only be found during the growing season, it is important that they be properly managed at the time of transplanting, to insure growth.

The only tool necessary is a common garden trowel for digging. There should also be some

pieces of burlap or muslin, and twine for tying them up. Also some newspapers for wrapping.

When the plant is found, dig carefully, preserving all the roots possible, and some soil adhering thereto. Dampen the cloths, and wrap the entire plant, after removing half the foliage. Now sprinkle with water until quite wet. Then wrap in two or three thicknesses of newspaper, and tie securely. Treated thus, they may be carried hundreds of miles with perfect safety.

Plant, preferably in the evening, water well, and shade with an inverted box, or cover with newspapers weighted down at the corners. The plant boosters are ideal for this purpose. Water daily until the plants are well established. The protection should be removed after three or four days.

In selecting specimens, do not be satisfied with anything but the choicest varieties, for there is often very great difference in the beauty of varieties of the same species. This is especially true of wild asters, golden rod, and a few others. Some are bulbous, others tuberous. These need very careful handling.

Such a bed, properly cared for, becomes more beautiful and satisfactory as the years go by.

GLOSSARY

Adobe. Spanish: Unburned brick. Also applied to a kind of chalky clay or rock. Usually strongly alkaline.

Alkali. One of a class of caustic bases, as soda, or potash.

Annual. Living only one year.

Anther. The summit of the stamen of a flower, containing the pollen or fertilizing dust.

Arborescence. Having the shape of a tree.

Biennial. A plant which produces roots and leaves the first year, and flowers, seeds or fruit the second year, and afterwards perishing.

Booster. A plant forcer or protector. A boxlike form with open bottom, and one side covered with glass, designed to protect early plants from cold winds and frosts. Usually made of felt, wood, or pasteboard.

Bordeaux Mixture. A compound of blue vitriol, lime and water.

Formula. Dissolve two pounds of blue vitriol in eight gallons of hot water. Also slake two pounds of fresh lime into three gallons of cold water. Strain each solution, and then mix, using a wooden container.

This is the very best fungicide known, and is used in the treatment of blights, rots, mildews, molds and rusts. By adding one ounce of Paris Green to the above recipe, the mixture will also destroy all foliage-eating insects. Apply with a sprayer. Standard Bordeaux can usually be purchased at drug stores.

Blanch. To take the color out. To make white.

Cole slaw. A cabbage salad.

Compost. A mixture of various substances for fertilizing or enriching the ground.

Decbud. To remove buds. In practice, all the buds but one on each stem are removed, so as to give increased size and vigor to the one remaining.

Flat. A shallow box used in starting seeds and small plants.

Fungicide. Anything that destroys fungi without injuring the plant.

Germinate. To sprout or bud. To start growth, either from seed or roots.

Hellebore. A poisonous, whitish powder, made from the rhizome of the White Hellebore plant. For sale by druggists. Dissolve one ounce in three gallons of hot water. When cold, apply with sprayer on foliage of the plants. Or apply by dusting directly on the foliage when the latter is damp. Destroys slugs, worms, caterpillars and leaf-eating insects.

Heeling out. Temporary transplanting. In heeling-out plants they are usually set somewhat closer and deeper than in ordinary transplanting.

Insecticide. That which destroys insects without injuring the plants.

Jardiniere. An ornamental flower pot or container for an ordinary pot.

Mulch. Half rotten straw, litter, leaves, etc., used to cover roots of plants to hold moisture, and to protect from frosts.

Also a layer of fine soil or dust around the plant to conserve moisture.

Plunge. Plunging potted plants is to bury the pot in the soil so that its top is even with, or slightly below, the surface of the ground.

Perennial. A plant that continues more than two years. Perpetual.

Procumbent. Lying down. Prostrate. Trailing.

Puddle. A mixture of clay and water of about the consistency of cream; in this mixture the roots of the plants should be dipped before planting.

Replant. To plant again when first planting fails to grow.

Transplant. To remove and plant in another place.

Trench. To dig very deeply in succession of parallel trenches, or rows of furrows.

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